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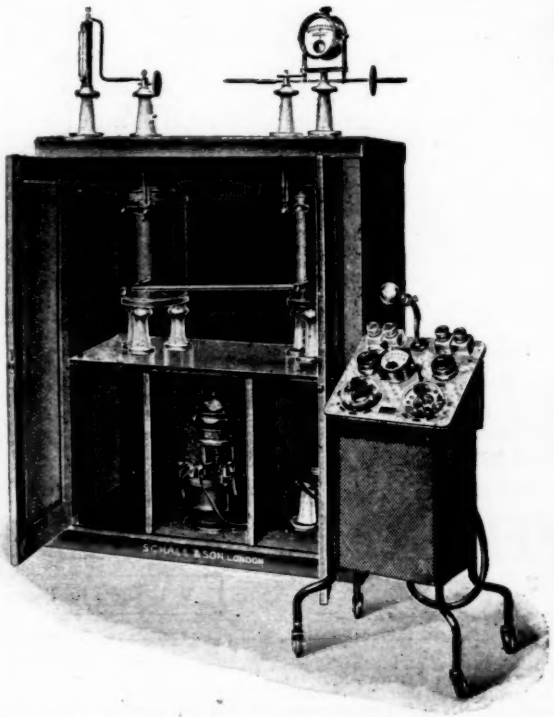

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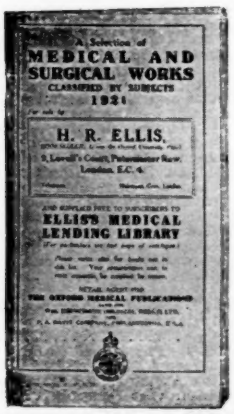

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THE chronic inflammatory diseases of the spleen have engaged my attention for several years; our knowledge of the subject is still small and the greater part has still to be discovered or confirmed. I shall limit this review to those affections that are caused by invasion of the spleen by an organism, whether such invasion is indicated by the discovery of the actual organism, by the clinical aspect, or by the fact that the lesion in the spleen, being inflammatory, admits of this view as the most likely ætiology. It is necessary first to allude to certain functions of the spleen in so far as they may be altered by splenic disease, and secondly to mention certain general changes consequent upon splenic inflammation.

The spleen is, first, the main lymph gland of the abdomen, and the lymphatics of the capsule communicate directly with the peritoneal cavity. Secondly, by virtue of its muscular fibres it is the sole remaining lymph heart of the mammalian body. Thirdly, it is one of the organs where effete red cells are destroyed. These functions, as we well know, may be taken over by other organs on extirpation of the spleen, a procedure that produces no serious ill-effect and merely causes the white cells, in particular the mononuclear count, to be in excess for a variable time. Being a lymph gland it naturally supplies certain cells to the blood, chiefly the mononuclear. In embryonic life it produces nucleated red cells and probably acts like the normal red marrow; in various conditions we see a tendency for this reversion to an embryonic function. The spleen becomes infected in three ways: first, as the result of a general blood infection which subsequently may become restricted to the spleen, as in syphilis and tuberculosis; secondly, because the spleen in destroying blood cells comes into fuller contact with the organism, as in malaria and kala-azar; and thirdly, being the largest lymphatic gland in the abdomen, it may be the point of attack in any gastro-intestinal infection.

LOCAL EFFECTS OF INFLAMMATION ON THE SPLEEN.

Apart from abscess and local conditions such as caseation and gummata, splenic inflammations may conveniently be divided into the acute and chronic forms. In the acute form the spleen is enlarged, its capsule stretched, and it is a flabby organ at the post mortem, though in the living body by reason of the tension of the blood it is probably firm to the touch. The Malpighian bodies are seen with difficulty and the whole of the pulp can be expressed as a reddish opaque fluid which contains red and white cells intimately mixed; this picture is what we term the septic spleen. In the chronic form of inflammation the general effect is to cause a hyperplasia and subsequently a reduction in the lymphoid elements, leading to an obscuration of the normal distinction between Malpighian body and pulp. One form, the hyperplasic, shows intense catarrh and filling up of the sinuses of the spleen with cellular elements. In the atrophic form the Malpighian bodies atrophy, sometimes showing mere shrinkage, sometimes being replaced by endothelial cells, beginning in the centre. In addition there is much deposition of fibrous tissue rendering the splenic reticulum much coarser than normal, increasing considerably the thickness of the trabeculæ and sometimes the capsule. Along with these changes, which are constant, others occur in variable amount:—

1. Congestion or stasis in the pulp; the lacunæ in these parts are overfilled with blood as compared with other parts or with the normal spleen.
2. True hæmorrhage occurs in the trabeculæ, if they are thick, in the circumferential parts, giving rise later to the pinhead areas of absorbing hæmorrhage or pigmented scars that may be detected in many chronically inflamed organs.
3. Endothelial proliferation in the sinuses, which may show various types of cells.
4. Sclerotic lesions of the vessels—this is especially true of the central artery to the Malphighian body, where the thickening affects the whole substance of the walls and is mostly of the hyaline type, similar to that seen in other organs such as the kidney.
5. Endophlebitis of the veins communicating directly with the splenic pulp, with the formation of thrombi, which may become detached.
6. Infarcts, as to the mechanism of whose formation there is still some doubt. The fact that they are frequently seen in those spleens in which the trabeculæ show most hæmorrhages might associate this process with it. It is certain that it is a local splenic affection and not produced by emboli formed elsewhere.
7. Amyloid change occurs frequently and is confirmatory of the infective origin of such inflammatory affections as cannot be referred to a known specific cause.
8. Embolism of the splenic vein with or without the circulation of non-particulate toxin sooner or later produces gross changes in the portal area of the liver leading to destruction of liver tissue and fibrosis. Infarction from this cause has not to my knowledge been described, but I hope soon to publish experimental proof of its origin in this way.

All these changes in varying amounts are common to chronic splenitis of whatever causation. If the disease be more active we see hyperplasia and enlargement; if it be late and quiescent we find fibrosis and atrophy. Post mortem many fibrotic spleens are met with which have had active chronic disease at same time.

BODILY EFFECTS OF CHRONIC INFLAMMATORY LESIONS OF THE SPLEEN.

It is extraordinary to what extent the spleen may be enlarged and inflamed without producing serious constitutional effects, especially in some of the familial types such as splenomegaly with acholuric jaundice. It can only be explained by supposing that the subject of such splenomegaly having grown up with his lesion, does not consider the sense of ill-health or local discomfort abnormal.

1. The first general effect is a sense of fullness; weight, oppression, or pain in the side from the presence of a tumour.
2. Anorexia, the effects of toxæmia with or without fever, seldom of a high grade.
3. If a chronic inflammation of the spleen begin early enough or is sufficiently intense it will have a marked effect in retarding growth and development. Such effects have been described by Gilbert and Fournier and by Frederick Taylor.[1] Children show stunted growth, osseous changes, clubbed fingers, pigmentation of the skin, fissuring of the tongue, and other evidences of malnutrition. Several cases are described with epileptic attacks. In adults there may be considerable atrophy in various organs with marked pigmentary changes in the skin, general or patchy. It is no doubt possible that these changes may occasionally be the result of congenital syphilis with splenomegaly, but cases are now sufficiently numerous in the absence of signs of syphilis to establish their origin from causes associated with the splenomegaly.
4. Anæmia. All forms of splenic inflammation tend to the destruction of blood elements, but in varying degrees, so that the term splenic anæmia for what is probably a specific infection of the spleen is a poor name. Splenic inflammation produces most frequently an anæmia of the chlorotic type. In a proportion of cases there is a marked diminution of white cells without any serious alteration in their relative proportions. Some cases show even an increase in white cells. That changes in the number of white cells are not indicative of any specific infection it is only necessary to mention that the most marked examples of diminution are seen in kala-azar. I have myself watched the gradual onset and disappearance of a chlorotic anæmia with leucopenia and enlargement of the spleen in a lady who had previously been operated upon for tuberculous glands of the neck. It has been suggested that the anæmia may be due to the hæmatemesis that occurs in the so-called splenic anæmia; but this cannot be the full ætiology, as the anæmia

may be present without hæmatemesis or gastric disturbance over long periods in the evolution of the disease. A few cases are recorded with an anæmia of the pernicious type under circumstances in which there is no question of a diagnosis of the so-called idiopathic pernicious anæmia. It occurs in those cases in which the tendency to anæmia has been at work the longest time or in those whose anæmia has developed during the period of growth, especially congenital cases of acholuric jaundice.

5. Polycythæmia is a rare complication of chronic inflammation of the spleen. It is current opinion that chronic tuberculosis of the spleen is one of the infections of the spleen that produces it. Having carefully re-examined the evidence which we shall discuss later I cannot admit that there is in tuberculosis of the spleen any more, if as much, tendency to polycythæmia as in other conditions. Leaving aside the question whether there is a primary blood disease resulting in an enormous over-production of red cells and consequent passive dilatation of the spleen, there is no doubt that a secondary polycythæmia occurs caused by a chronic non-suppurative thrombo-phlebitis of the splenic and portal veins with obstruction, and that the spleen in these cases shows the general features of other inflammations.

6. The relation between splenic inflammations and leucocytosis and the more intense myelocytic reactions of the blood-forming tissues is very close, but cannot yet be fully explained. Cases are on record, and most clinicians of experience are aware, of the picture of splenic anæmia ultimately becoming leukæmia, especially in children. These may be said to have shown at first the aleukæmic stage of leukæmia or be in an intermission. On the other hand, many infections produce a temporary leukæmic reaction in the blood, and the possibility suggested by G. R. Ward cannot be disregarded—viz., that leukæmia is the reaction of the tissues to a specific organism exactly corresponding to the infectious leukæmia of fowls.[2] Apart from the special cellular reactions of the spleen in leukæmia the organ shows many of the features that are associated with splenic inflammations of known ætiology, such as fibrosis, atrophy of the normal tissue elements, hæmorrhage, thrombo-phlebitis, and infarction.

7. Relation to hepatic conditions. In explaining the mechanism of the production of hepatic inflammation, jaundice, and cirrhosis it is only necessary to state certain facts in order to be assured of their nature: (i.) the liver by its position in the circulation filters off from the splenic blood both particulate and soluble matter that may be discharged into it; (ii.) the presence of chronic progressive inflammatory disease in the spleen ultimately leads to chronic inflammatory disease (portal cirrhosis) in the liver, as Banti amply demonstrated many years ago; (iii.) the presence of a thrombo-angeitis in these spleens or in the veins draining them points out the mechanism whereby the materies morbi is transferred to the radicles of the portal vein in the liver; (iv.) in Gaucher's type of splenomegalia emboli of the characteristic spleen cells can be identified in the radicles of the portal vein. In tuberculosis also the transference of infective material from spleen to liver can be inferred; (v.) the removal of the spleen cures many cases in which the hepatic condition is not too advanced.

These facts amply explain the intimate connexion between splenic and hepatic inflammation. The fact that the liver lesion is a cirrhosis and not a specific granuloma that can be recognised as anatomically distinct rests on two facts: first, the emboli transferred from spleen to liver being produced in the radicles of the splenic vein are small; the lesion in the liver will therefore be small and may occur in all parts of the liver. Secondly, the liver is an organ whose power of destroying infective matter is very great—witness the fate of previous gummata in the common form of the botryoid liver, and the rarity of any but scattered miliary tubercles in post mortems from cases of generalised tuberculosis.

8. Hæmatemesis. Closely connected with this factor of embolism is the symptom of hæmatemesis, so common in some forms of splenomegaly. The origin of this sign is probably not always the same in every case; in the first place it may arise from stasis in the portal system and hæmorrhage from the œsophageal or other neighbouring veins, as in portal thrombosis [3] and in Laennec's cirrhosis; secondly, in spleno-portal embolism and thrombosis it is easy to imagine an embolus issuing from the spleen and becoming shunted along the vasa brevia or left gastro-epiploic vein to the stomach wall, where in one of their tributaries it might settle down to produce an inflammatory lesion and hæmorrhage. Moreover, it has been estimated (Mayo) that 40 per cent. of the blood in the splenic artery goes to the stomach. In confirmation of this I might mention that I have been able to produce gastric ulcers and hæmorrhage in a monkey by infecting it via the peritoneum with an organism isolated from a case of acholuric jaundice. In some cases it is possible that the anæmia is entirely due to the periodic loss of blood, as in the case recorded by Bland-Sutton,[4] where the return of the blood count to normal was a sure sign of impending hæmorrhage, the causation in this case being an organised thrombosis in the portal vein.

From an inflammation in the spleen there may therefore occur, from time to time, a transference of the organic cause, sometimes as bacteria only, sometimes with the tissue and inflammatory elements of the lesion, leucocytes, fibrin, catarrhal endothelial cells, in the form of minute emboli. This transference implies an inflammatory lesion in the liver which we know appears ultimately as portal cirrhosis; but in the more active stage it is conceivable that a local or general catarrhal hepatitis occurs leading to jaundice. As we shall see later certain forms of splenic inflammation are more frequently associated with jaundice than others. The other hepatic symptom, ascites, is rare in primary splenic disease, only occurring when the liver is grossly cirrhotic or when the portal vein is markedly obstructed.

CRITERIA OF CAUSATION.

Splenic inflammation and its consequent action on bodily tissues may conceivably be caused by a toxin originating in and dependent on the elements of splenic tissue only—as may be true of the thyroid in exophthalmic goitre and of the kidney in uræmia. On the other hand, it may come from the action of an organism on splenic time and the efforts of the spleen in repair. There is no evidence at present available that the spleen of itself produces an internal secretion which is deleterious under any circumstances. The body compensates at once for loss of the spleen, and splenic enlargements and inflammations occur without any effect on the body. I am frankly sceptical about any ætiology which implies some undemonstrated non-bacterial toxin secreted by an abnormal metabolism of some splenic tissue. It were better to proceed, even at the risk of ignoring such possibilities, from the known effect of invasion of the spleen by a pathogenic organism to those groups of cases whose causation is uncertain. Therefore, my working rule, which bids fair to be more fruitful of practical results than any other, is to suspect all splenic enlargements of an inflammatory type as being caused by extraneous organisms until proved otherwise.

For instance, we have now very adequate and complete knowledge that primary splenomegaly with inflammation in malaria, kala-azar, tuberculosis, and syphilis, are all due to the specific organisms of those diseases. There is little doubt, moreover, that the splenic form of Hodgkin's disease is of bacterial origin, though the organism itself is not certain. Therefore, in attempting to explain splenic inflammations in the same manner as those of known ætiology, we are making no assumption for which there is no analogy.

What criteria must be fulfilled in order to accept that a given organism is the cause of the splenic condition? In the first place it is necessary, especially in new work, if possible, to fulfil Koch's postulates that the organism must be isolated in pure culture from the individual affected, that it shall be cultivated outside the body, and that on injection into animals it shall produce and be contained in the lesions following introduction into an animal. These are very rigorous tests, and in some human disease whose causation is generally agreed upon they have not been fulfilled. The reason for raising this point here is to draw attention to the very loose way in which many reports of cases are presented. In reporting a case as syphilis of the spleen, for instance, we must carefully distinguish between the lack of certainty of the clinical diagnosis—even aided by morbid anatomy—and the scientific diagnosis that fulfils all logical desiderata. This has been most evident to me in going over again the evidence for the causation of the reported cases of splenomegaly due to tuberculosis and syphilis; some authors rely on a mere naked-eye diagnosis of tuberculosis at the post mortem, others give microscopic results but make no mention of the presence or not of bacteria. In syphilis the reports are even more uncertain.

When an infection of the spleen is capable of proof by demonstration of the bacterial cause let us admit for purposes of science only those cases thus proven, allowing the other cases as doubtful.

I propose, therefore, in dealing with the specific infections of the spleen to be severely critical as to what shall and what shall not be included in the respective groups.

SYPHILITIC SPLENITIS.

Syphilis as an acute disease causes an enlargement of the spleen in the secondary stage, especially in congenital cases, and there is a consensus of clinical opinion, which I do not dispute, that splenomegaly may be present as a principal feature in the tertiary stage. When we come to examine the evidence for this in the recorded cases, numbers must be rejected as being uncertain, because the proof of their syphilitic origin rests on too slender evidence. Upon what evidence may the nature of the infecting spirochæte be reliably determined? The conditions are as follows:—

1. The presence of an inflammatory lesion in the spleen with the features of syphilitic inflammation in which the *Spirochæta pallida* has been found or transmitted to animals. This is I believe fundamental if we are even to acquire any accurate knowledge of the clinical effects of the syphilitic spleen. Such splenomegaly being tertiary, it will be all the more difficult to stain spirochætes, and Prof. H. M. Turnbull assures me it requires very prolonged search by our present methods. Nevertheless the spirochæte has been reported in such spleens, and it may be hoped that improved methods will allow of their more frequent discovery.

2. Secondary criteria not in themselves proof, but giving a strong probability of syphilitic origin. These are (*a*) a family or previous history of syphilis; (*b*) external or internal evidence of syphilis in the body, including a positive reaction to Wassermann's test. In the absence of other evidence a positive Wassermann test is no proof that an enlarged spleen is the result of syphilis. Such a conjunction may be excellent clinical ground for applying full anti-syphilitic treatment, but while syphilis is so prevalent it is no sure argument for a syphilitic origin; (*c*) the reaction to treatment. Other diseases react well to all the remedies employed in syphilis; therefore the evidence derived from this source cannot but be doubtful.

Morbid Anatomy.—Variable estimates have been reported of the number of syphilitics affected with enlargement of the spleen. It is more frequent in congenital cases in which the proportion showing splenic enlargement has been reported by Hasland[5] as 36·4 per cent. and by Costens[6] as 48·55 per cent. In acquired syphilis it has been variously estimated from 2 to 36 per cent., but the lower figure is probably truer than the higher. Apart from the acute infectious type of spleen that has been described in the secondary stage, two forms may be described, according to the presence or absence of stasis in the portal vein resulting from thrombosis or obstruction in the portal vein or its branches. This form gives rise to enlargement mainly from dilatation of the splenic venules, catarrh of the sinuses and deposition of fibrous tissue. The second form is a true splenitis of the chronic type, with marked increase of fibrous tissue especially of the capsule which may be raised into small buttons or knobs. The Malpighian bodies are atrophied and the sinuses replaced by thick-walled lacunæ, showing catarrhal changes. End-arteritis is so constantly present in all forms of splenitis that it forms no distinctive feature of this type. There is little to distinguish the syphilitic fibrosis from other types, unless it be perisplenitis. Miliary gummata have been described as in syphilitic hepatitis. True gummata have also been described, but Prof. Turnbull assures me that he has never yet seen a gumma of the spleen in the London Hospital. A similar reference to its rarity is made by Coutts in his Hunterian Lectures, 1896. Hasland made 154 autopsies in syphilis in which the spleen was affected, but found no gumma. In the absence of bacilli some tuberculomas might easily be mistaken for gummata. In considering the reported cases of primary splenomegaly from syphilis the majority of these are not indubitably syphilis, so that the clinical picture must be held in some uncertainty. I have felt it my duty to review all the cases available to me, and have found altogether 25 cases reported as primary syphilitic splenomegaly, but of these only two are of first importance in having adequate proof of syphilitic origin. These two cases have been reported by Giffen[7] from the Mayo Clinic, and both were found to have *Spirochæta pallida* in the walls of the arterioles.

1. Giffen. Case 1.—Female, aged 40, with a history of an enlarged spleen since an attack of typhoid fever 12 years previously. One year before she had an abscess of the chest wall which had discharged dead bone and had not properly healed. Four weeks previously she had had abdominal pains followed by slight jaundice. The W.R. was four plus. There had been no hæmorrhage. The spleen was very much enlarged and no effect was produced with antisyphilitic remedies. The blood count showed a moderately severe chlorotic anæmia, R.B.C. 2,950,000, W.B.C. 6650, Hb 48 per cent., colour index 0·6, and a differential count that was not abnormal. The spleen, 12 in. long by 7 in. broad, adherent to the neighbouring organs, was removed by operation. The patient made a good recovery and one year after her blood count was: R.B.C. 3,552,000, W.B.C. 11,000, Hb 80 per cent., colour index 1·02, differential count normal. The spleen weighed 900 g.; it was normal in contour, the external surface being slightly nodular and showing considerable perisplenitis; on section it was firm, tough, and very dark-coloured; microscopically there was diffuse fibrosis with marked arterio-sclerosis, the adventitia of some of the arteries being thickened and amounting to typical gummata. In the vessel walls *Spirochæta pallida* was found.

2. Giffen. Case 3.—Male, aged 35, with a history of syphilis at 21. He had had three positive W.R. tests during the previous two years, but at the time of examination it was negative. There were moderate splenomegaly, slight anæmia, and recurrent hæmatemesis. He had had long antisyphilitic treatment with partial relief only. In his previous history he had had jaundice for two months, six years previously, and about that time he had an ulcer of the right shin. The liver and spleen had been enlarged for two years previously. There had been recurrent hæmatemesis. He complained of headache and had had nodules over the frontal region. The spleen, removed by operation, was five times the normal size, showing intense general fibrosis, some pigment, arterio-sclerosis, and a typical small gumma near a vessel. A few spirochætes were found. The liver was deeply fissured and small. The blood count nine days before operation showed R.B.C. 4,240,000, W.B.C. 4900, Hb 85 per cent. The recovery was uneventful.

Coming now to those reported cases whose syphilitic causation is probable only: one group of these showed a marked improvement under salvarsan or neosalvarsan.

3. Schulmann and Weissmann.—Male, aged 40, with congenital syphilis and erythema—R.B.C. 12,000,000. Under a course of neosalvarsan the R.B.C. became 6,000,000. The white cells were 8000, and remained unchanged.

4. W. Schmidt.[8]—Female, aged 14, whose mother had tabes, had two abortions immediately before the patient's birth, and suffered from an enlarged spleen, anæmia, enlarged liver and glands of the neck; R.B.C. 4,800,000, W.B.C. 3200, Hb 84 per cent. The Wassermann reaction (W.R.) was positive. There was considerable lessening in the tumour and betterment of the general conditions by a subcutaneous injection of salvarsan.

5. Perussia.[9]—Female, aged 30, with a history of two miscarriages, repeated metrorrhagia leading to very bad anæmia, Hb 22 per cent., R.B.C. 1,990,000, W.B.C. 4800, C.I. 0·6. There was enlarged liver, vomiting, diarrhœa, and mild fever; W.R. negative. After a course of salvarsan there was marked diminution of the spleen, complete restoration to normal health, and no objective anæmia.

6. Pollitzer.[10]—Female, aged 13, having had splenomegaly since the age of 2, and recurrent jaundice. The fragility of the corpuscles was increased (0·54 per cent.). The W.R. at the age of 11 was positive. After an injection of salvarsan the jaundice disappeared for three months.

7. Clark.[11]—A patient with the picture of splenic anæmia and Banti's disease and negative W.R., cured by anti-syphilitic treatment.

8. Anderson.[12]—A man, aged 33, with attacks of diarrhœa for six years and persistent jaundice the previous year. There were old healed ulcers on the right leg below the knee; W.R. positive. There was jaundice, enlarged spleen, œdema, and anæmia (R.B.C. 4,800,000, W.B.C. 4000, Hb 70 per cent.). Cure was effected by hydrargyrum c. creta, and later by repeated salvarsan injections.

9. Vaillardi.[13]—A case reported as syphilis improved markedly under salvarsan, but as the patient had had severe

æstivo-autumnal fever, and showed a negative W.R., it is likely that malaria played a part in causation.

10. Bernard.[14]—Quotes a case of mild splenomegaly and jaundice, appearing several years after a syphilitic chancre, and rapidly cured by mercury.

The next series are taken in their chronological order:

11. Coupland.[15]—Female with splenomegaly and anæmia had splenectomy and improved markedly. Two years after the operation the patient died from hæmatemesis and ascites. The liver at the post-mortem was much scarred and typically syphilitic. The spleen showed fibrous atrophy of the corpuscles and numerous hæmorrhages.

12. Fuhs.[16]—Female, aged 17, having had five years' history of a painful abdominal swelling; progressive weakness and loss of energy with occasional epistaxis. The blood, showing a chlorotic anæmia with 5500 whites, was restored to normal after operation for splenectomy, the W.B.C. being 11,000. W.R. was positive; spleen showed caseous areas.

13. Queyrat.[17]—Male aged 24, syphilis five years before; enlarged liver and spleen, ascites present. W.R. blood and ascitic fluid was positive. No blood counts are given.

14. French.[18]—Male, aged 5½, whose blood had been positive on several occasions with the clinical picture of pernicious anæmia; R.B.C. 1,900,000, W.B.C. 21,000, Hb 20 per cent., C.I. 0·5. No benefit from salvarsan and other syphilitic remedies. Excision of spleen caused rapid amelioration of anæmia to 86 per cent. Hb. A sister of the patient had a very similar condition.

15. Hartwell.[19]—Male with severe secondary anæmia and hæmatemesis; W.R. strongly positive; antisyphilitic remedies produced no improvement, but excision of the spleen caused immediate betterment and the Hb rose from 25 per cent. to 80 per cent. The trabeculæ were much thickened and there were large and numerous follicles with fibrosed centres.

16. Osler.[20]—Female, aged 22, had had obscure abdominal illness at 15 years; blood picture of leukæmia. Post-mortem, liver of hepar lobatum type with fibrous gummata projecting into the capsule. The spleen, 23 × 16 cm., had slight adhesions, was dark red on section, with no trabeculæ or Malpighian bodies to be seen.

17. Osler.[20]—Male, aged 34, with a history of syphilis, having had jaundice and dropsy three years previously; R.B.C. 1,400,000; W.B.C. 7500.

18. Osler.[20]—Male, aged 11, history of nodes on skin and arthritis of left knee three years before. Several children in family were dead, but there was no clear syphilitic history. Liver enlarged and irregular, spleen very large, blood count practically normal three months before; later count showed R.B.C. 5,770,000, W.B.C. 4600, Hb 65 per cent.; W.R. negative; increasing ascites; after a hæmatemesis followed by melæna R.B.C. 2,000,000; much blood in stools. Post mortem, anæmic organs, œsophageal varices, one of which had caused the bleeding. Enlarged spleen with dense capsule and much internal fibrosis. The liver was grossly cirrhotic and deformed with large islands of newly-formed liver substance.

19. Stevenson.[21]—Female, aged 22, who from 9 years had had attacks of epistaxis and gastro-enteritis. The mother had syphilis and had had two abortions previous to the patient's birth. For one year she had been very anæmic with an enlarged liver and spleen. R.B.C. 1,500,000, W.B.C. 4568, Hb 83 per cent. W.R. not recorded. Twelve days after excision of the spleen the blood showed R.B.C. 4,400,000, W.B.C. 11,200 and Hb 83 per cent. The microscopic section of the spleen showed lacunæ full of pale cells with and without nuclei.

20. Hey Groves.[22]—Female, aged 40, who since infancy had had ill-health with attacks of vomiting and abdominal pain. There was free fluid in the abdomen, the urine was normal, but no mention is made of the W.R. R.B.C. 6,000,000, W.B.C. 16,000, Hb over 100 per cent. Splenectomy did not give relief; there was recurrent ascites after the operation. The liver was found to be grossly deformed.

21. Giffen.[7] Case 2.—Female, aged 32, with moderate splenomegaly and anæmia of the secondary type without leucocytosis. The liver at the operation contained palpable gummata and was cirrhotic. There was no hæmatemesis, no history of syphilis, but the W.R. was strongly positive. No improvement followed antisyphilitic treatment, but splenectomy effected a cure. There was moderate diffuse fibrosis of the spleen.

22. Caussade and Levi Franckel.[23]—Male, aged 26, suffering from gastro-intestinal symptoms with jaundice and a positive W.R. The spleen was enlarged and mercury treatment failed. The spleen showed fibrosis of arterial origin with peri- and end-arteritis. The liver showed cicatricial sclerosis. The blood count varied from 2,000,000 to 3,500,000 red cells and from 1000 to 4500 white cells.

23–5. Symmers, Gettler, and Johnson.[24]—Six cases, of which three had strongly positive Wassermann reactions: (*a*) female, aged 29, suffering from punched-out ulcers of both ankles from the age of 15, a large spleen, anæmia, of R.B.C. 3,500,000, W.B.C. 8200, Hb 69 per cent. The spleen, removed by operation, had a finely granular substance, dark red, an old healed infarct and several mineralised arteries which the authors believe to be characteristic of syphilis. The patient was cured by splenectomy, having previously been successfully treated for the leg ulcers by antisyphilitic remedies. (*b*) Male, aged 32, had a large spleen and ascites. R.B.C. 4,100,000, W.B.C. 3500, Hb 65 per cent. The spleen, removed by operation, weighed 1040 g., was "meat red" on section, finely granular, and cut with difficulty. The liver at the operation appeared finely granular. (*c*) Male, aged 45, with an enlarged spleen and ascites. R.B.C. 4,160,000, W.B.C. 5200. At the autopsy the liver was "gnarled" and a solitary gumma was present in the right lobe.

Characteristics of Syphilitic Splenomegaly.

Assuming a syphilitic origin in all these cases we may now sum up the characteristics of syphilitic splenomegaly. The anæmia tends to be of the chlorotic type, as in the typical splenic anæmia, and the red cell count drops to just over one million. French reports his case as having the clinical picture of pernicious anæmia, so severe was the anæmia, though chlorotic in type. Schulmann and Weissmann case had policythæmia. The white cell count varies. One of Osler's cases had the blood picture of leukæmia; in the other cases where counts are given the figures vary from 4500 per c.mm. in Stevenson's case to 16,000 in Hey Groves's case and 21,000 in French's. The leucocytosis recalls that after splenectomy for trauma we must have in mind the possibility that a spleen may be so damaged by disease that the same effect at compensation is demanded from other white cells in the body which we see after splenectomy. Further, such compensation having been established before operation, we should not expect such a marked leucocytosis afterwards.

As regards jaundice both Giffen's cases had suffered from it but it was not permanent. Attacks of jaundice are reported in Pollitzer's and Osler's second case. Four cases (Giffen (Case 3), Coupland, Hartwell, and Osler (Case 3)) are reported with hæmatemesis, and in two epistaxis is mentioned. Four cases are reported as having had ascites (Osler (Case 3), Coupland, Queyrat, and Hey Groves). The reaction to antisyphilitic remedies, including salvarsan, is startling in its unevenness. In Schulmann and Weissmann's, Perussia's, Pollitzer's, and Clark's cases, above described, the results were extremely satisfactory, while in others (Giffen, Cases 1 and 3, Hartwell, French) it produced no amelioration. Other cases described, with enlarged spleen, positive W.R., and chlorotic anæmia, have been uninfluenced by salvarsan and other remedies, and we must search for some factor which enables us to explain why one can be cured and the other not. Some enlarged syphilitic testicles can only be cured by excision and the cerebral gumma is not always amenable to specific treatment.

TUBERCULOSIS.

Morbid anatomy teaches us that tuberculosis of the spleen is extremely common as a secondary feature. An enlarged spleen is frequently met with in general glandular tuberculosis, but for the most part it causes no symptoms of splenic disease. Primary tuberculosis of the spleen is rare, but from the reported cases not quite so rare as the syphilitic. Let us examine the evidence for the tuberculous origin of these spleens. Tuberculosis is such a widespread disease that the mere presence of what look like tubercles of any size whatever is not evidence of the causation by tuberculosis of a disorder of this organ. During life the symptoms should point to the spleen being the cause; we should attempt, having proved the spleen to be tuberculous at the operation or post mortem, to fulfil Koch's postulates by ascertaining if the disease from which the patient suffered agreed with what we know in general about primary tuberculosis of the spleen.

I regret to say that, as with syphilis, many authors show some failure to recognise what should and what should not constitute an anatomical diagnosis of

tuberculosis of the spleen. Some cases are reported as such merely on the naked-eye diagnosis, whether the lesions be of the miliary or caseous type. I admit a high degree of probability and accuracy in such opinions, but they cannot be deemed to approach the accuracy demanded from a scientific test. Some authors fail to give a report of the histology and a large number omit any mention of a search for tubercle bacilli. As in other situations—tuberculosis of the skin for instance—it may require a prolonged search to find tubercle bacilli or they may never be found in what is a clear case. For the tuberculous origin to be adequately proved we should demand in an enlarged spleen the presence of tubercle bacilli in lesions which should suggest this origin, and no serious or general tuberculosis in other organs. Moreover, it is necessary to stipulate that there should be no serious disease in other organs masking the splenic symptoms. One case, for instance, reported as tuberculosis of the spleen, had infective endocarditis and infarcts in the spleen. I have also other evidence that need not now be detailed, that some splenic infections show a lessened resistance to tuberculosis, and a tendency to stir into activity some old lesion. As regards the recorded cases of primary tuberculosis of the spleen we have the very complete account of those recorded up to 1912, by Winternitz.[25] Some of these 51 cases are not sufficiently proved to be included in this summary. There remain, however, 17 clear cases of primary tuberculosis of the spleen, in which tubercle bacilli had been found. In subsequent years I have been able to discover four others reported by Bianchi,[26] Schubert and Geigel,[27] de Montmollin,[28] and P. Albrecht.[29] It will not be necessary to record the individual cases (see References). A summary will serve to make clear their anatomical and clinical characteristics.

Morbid anatomy.—The tubercle bacillus may cause in the spleen both acute and chronic inflammations. (1) In the acute variety the spleen is described as simulating the typhoid spleen with or without the presence of naked-eye tubercles. (2) Disseminated miliary, caseous, or endothelioid tubercles with varying fibrosis of the pulp and some slight fibrosis of the capsule, upon which may be seen minute scars of old healed miliary or even caseous tubercles. In the early stages of this type hæmorrhages are present. (3) A third type must be added to these—namely, chronic generalised fibrosis with red or pale pulp and a few scattered points, the remains of minute caseating areas, suggesting a tuberculous origin. This is the condition in a spleen removed in the London Hospital from one of Lord Dawson's cases in 1912. No tubercle bacilli could be seen in stained sections, but portions of the pulp were infective to a guinea-pig. A similar spleen again positive only to a guinea-pig experiment is recorded by Auché.[30] The congestion in all these forms may be very severe, the sinuses being distended with blood. True hæmorrhages may occur, especially in the trabeculæ. The Malpighian bodies, which are the site of the majority of tubercles, may either show little change or the centre may gradually be replaced by epithelioid cells included in which may be a giant cell. Some may show caseation and in the more chronic cases the Malpighian bodies are completely replaced by tuberculous structures. The other forms of splenomegaly in tuberculous disease—e.g., amyloid—are secondary to other lesions and therefore do not concern us.

The symptoms of tuberculous splenomegaly may be general and local. In about 25 per cent. of cases there is fever, sometimes in attacks and sometimes as a marked feature. Sweating and collapse is mentioned, and very constantly loss of weight, weakness, and great lassitude. As regards local symptoms there is pain and a sensation of tumour and weight in the left side. The pain may vary in its incidence with positions and movements of the body, or may come on only during digestion. The proximity to the diaphragm may cause pain in respiration. The majority of cases are very chronic, but short illnesses terminated by death have been recorded. There are 15 clear cases in the literature that have been operated upon, with nine cures. The disease is not strictly primary in the spleen; other organs show signs of tuberculosis. Thus of Winternitz's cases nearly half showed pulmonary changes, and five had enlargement of other glands. Other clinical features have been an enlarged liver with cirrhosis (Sotti[31]), ascites, caries of the spine, meningitis, and intestinal ulceration. The features in the blood are either absent altogether or very moderate. In nine cases in which tubercle bacilli have been found in the spleen, the condition of whose blood is mentioned, six were normal and five have counts with a moderate degree of anæmia of the chlorotic type. The lowest red count is 3,200,000 and the lowest white count is 2500, the average white count being 5000. The lowest hæmoglobin figure is 50 per cent. The degree of anæmia is therefore slight and has not been a marked feature of any case.

It is current opinion following on Winternitz's critical review that polycythæmia is one of the characteristics of a tuberculous splenomegaly. But in eliminating from our list of cases those whose tuberculous origin is not adequately proved no case shows an abnormally high blood count. Of the doubtful cases, that of Moutard-Martin and Lefas, whose blood showed 8,200,000 R.B.C. and 31,428 W.B.C., there was naked-eye evidence of tuberculosis in many other organs than the spleen, and even admitting the tuberculous origin the relation between tuberculosis of the spleen and the polycythæmia is not clear. In Carminotti's case there was a much scarred spleen, but no other evidence of tuberculosis, and caries of the spine. Here the counts were R.B.C. 7,000,000, W.B.C. 6000. The other four cases recorded by Winternitz have a R.B.C. of 6,000,000. On these grounds we cannot yet admit that polycythæmia is proven as an association with a tuberculous splenomegaly. On general grounds that have previously been discussed a polycythæmia may be expected if there be obstruction in the portal vein; such, however, cannot be used in any case as an argument for a tuberculous origin of a chronic splenitis. When tuberculosis affects the thorax as well as the spleen there are other possibilities for a mild polycythæmia.

Implication of the liver is not uncommon. Of Winternitz's 17 positive cases tubercles were present in 10 and there was atrophic cirrhosis in one. Sotti describes the liver changes in these cases as frequent. The common anatomical changes are fatty degeneration, necrosis, swelling and thickening of the collagen substance, and sometimes small lymphatic accumulations, and he looks upon interstitial hepatitis as dependent upon changes in the splenic vein. Jaundice as a symptom of tuberculous hepatitis in these cases is rare and I have only found one mention of it, in Winternitz's own case. Hæmatemesis is not recorded in any case, unless we admit that of Paulicek, in which tubercle bacilli were not found. This case had a hæmatemesis at six years when the illness commenced. Glands are mentioned as enlarged in four cases and the lungs were affected in six cases.

Splenitis from Malaria and Kala-Azar.

It would not be in keeping with my purpose to discuss in similar detail other types of specific inflammations of the spleen whose ætiology is uncertain. The two best-known types are those due to malaria and kala-azar. In the former, symptoms specially related to the spleen are not frequent, but when they exist splenectomy is a possible and very successful remedy. In kala-azar with a moderate degree of anæmia of the chlorotic type there is an unusual diminution in the number of leucocytes of the blood, sometimes to below 1000 per c.mm.

OTHER CHRONIC INFLAMMATIONS OF THE SPLEEN.

We have hitherto followed an ætiological classification, and there still remain those types for which we have no certain cause. From what has been said on the general symptoms associated with chronic splenitis it will be apparent that if we attempt a too rigid subdivision from the symptoms and signs alone we shall be hindering a proper knowledge of ætiology. Nevertheless, a provisional clinical classification is necessary for practical purposes, and if we are aware of its limitations no error will ensue. Moreover, even on our purely clinical classifications we may be able to separate the cases into their ætiological types. When classification is not based on ætiology we run the risk of undue complication. In those types we further consider I propose to adhere to clinical views. Such groups of cases are: (1) Acholuric Jaundice, including the congenital and acquired types; (2) Splenic Anæmia (so called); (3) Gaucher's splenomegaly; (4) Egyptian splenomegaly; (5) Hodgkin's disease (splenic type). It will be sufficient, however, to notice the first two.

Acholuric Jaundice.

There would be a consensus of opinion amongst clinicians that a majority of the cases described under this heading probably owe their origin to a single cause or a group of nearly allied causes. From the general account of splenic inflammation it will be obvious that such a group of symptoms is possible

with many specific causes. This would certainly be true of syphilis, in which, apart from the effect of a splenic inflammation, a coexistent hepatitis might cause the jaundice. As regards the subdivision of this group of cases into the acquired (Hayem, Widal) and the congenital (Chauffard, Minkowski) there is no difficulty in presupposing an infective element if the analogy of syphilis be taken into account, and the extremely variable onset of the symptoms. Touching the congenital cases we may recall Beneck and Sabrazés'[32] observation of a suckling who acquired the disease from a wet nurse, who with two children was suffering from it. Considering also the numerous observations of its familial incidence the possibility of an infective cause becomes much stronger. The symptoms of this disease are a long-continued jaundice, sometimes with intervals and often with bouts of pain simulating cholelithiasis. The urine contains no bile. The degree of ill-health is often so little that patients continue to work as normal persons. The splenomegaly is often moderate, but large spleens are more usually met with, especially in the congenital variety. The anæmia is not often or markedly severe; it is of the chlorotic type, with an average red cell count of just over 3 millions. In some of the cases an anæmia of the pernicious type has been recorded (Gilbert,[33] Umber,[34] Burghard and Sutherland,[35] Giffen,[36] and Mosse[37]). The white cells vary, sometimes being increased, sometimes reduced, but they do not invariably show that reduction which is more characteristic of splenic anæmia. An increase of fragility of the red cells described first by Chauffard is seen in a large proportion of cases.

Morbid Anatomy.—The spleen tends to adhere to a definite type which is an argument in the uniformity of causation. The organ is firm and dark red to plum-coloured with little or no perisplenitis and few adhesions to other organs. On section the surface is very dark red and both Malphigian bodies and trabeculæ can be made out. Along the course of the trabeculæ, which show but little thickening, there may be seen hæmorrhages and brown or buff-coloured points the site of previous hæmorrhages. I have seen small infarcts in some; microscopically there is a moderate degree of fibrosis, engorgement of the sinuses with red cells, thickening of and hæmorrhage into the trabeculæ.

Ætiology.—With regard to the causation of this type of splenomegaly the only evidence I have leads me to think that it is due to a streptothrix organism.[38] In one case recently published I was able from the spleen pulp to isolate a streptothrix of the actinomyces type which is mildly pathogenetic to monkeys.[39] Further experiments with monkeys now in progress lead me to a greater assurance on this point. Intraperitoneal injection of a culture produces a prolonged period of general seediness with or without an enlarged spleen from which the animals may or may not recover. The human spleen from which this culture was originally obtained showed pigmented points in the trabeculæ in which were threads morphologically similar to those of a streptothrix. Here I may say that in previous writings where I have given the impression that Wheal and Chown's stain is specific for these threads, I have been wrong. This stain shows up iron pigment well and therefore all fibres thus impregnated, tissue threads included, are stained black; a diligent search, however, in the pigmented points reveals septate threads with segmenting ends and such can be seen in sections stained by hæmatoxylin alone. My view is that the reason for the hæmorrhage in the first instance is the presence of the organism and therefore in many healed lesions the organism must necessarily be equally impregnated with the tissue. It also bears on the point to say that the culture obtained from my case came from one of the pigmented points, and that all those from the pulp were sterile, as also were many from the former. It will be necessary to obtain positive cultural results in more cases before any more certainty can be expressed. The therapeutic effects of splenectomy in these cases are very satisfactory, and the operation should be undertaken in all cases where the disease produces a serious interference with ordinary life. Many cases, however, are not seriously ill, and to urge the necessity for operation is not desirable.

Splenic Anæmia.

The conditions included under this term may naturally comprise cases of a varied causation. As a definition of a disease it is bad and must ultimately disappear as our ætiological groups become manifest. But in shaping our knowledge it has served a very useful purpose in concentrating thought on this type; for though it is undoubted that many cases of known ætiology—e.g., from syphilis, tuberculosis, or malaria—might present the symptoms and signs of splenic anæmia, yet there is a unanimity of clinical opinion that there are a large number of cases with these symptoms of anæmia and splenomegaly that do not fall into any of the groups with a known cause. If I have been right in the manner of presenting the general symptoms of splenic inflammatory disease then we must assume that many infections located in the spleen may be severe enough to produce anæmia. It is only necessary to mention that kala-azar, malaria, and Egyptian splenomegaly,[40] the two former being specific in their ætiology, all produce marked anæmia and an enlarged spleen. The chronic septic splenomegaly, a febrile illness of many weeks with enlarged spleen, anæmia, and leucopenia, recently described by Sir John Rose Bradford,[41] is another instance. But when all these varieties depending on a cause specific to each have been eliminated there remains a group of cases that are neither syphilis nor tuberculosis and do not belong to any other known specific group. Such cases are very chronic, unless in children, and, as Banti long ago pointed out, they ultimately lead to cirrhosis of the liver and ascites.

Morbid Anatomy.—The size of the organ may be moderate or large. There is not much perisplenitis and that in patches only. The cut surface shows a marked fibrosis affecting both pulp and trabeculæ which may be very thick. The Malphigian bodies are reduced. The most constant feature, however, is the large number of pigmented points along the trabeculæ which, if seen in the early stage, are hæmorrhages. The whole surface may show a reticular arrangement of these pigmented fibres, so extensive has been this hæmorrhage. This appearance, as has been mentioned before, is not confined to one or two groups of splenic inflammation; but my experience teaches me that it is more marked in this than in other types if we except certain of the leukæmias.

Ætiology.—In three cases I have been able to examine by the kindness of my London colleagues I have obtained positive bacteriological results from the spleen in two. The cases were as follows:—

1. Male, aged 30, under the care of Dr. Batty Shaw in University College Hospital, with a history of repeated hæmatemesis, from the last of which he did not recover. The W.R. was negative. Cultures were made from the spleen and I only found out later that it had not been removed surgically as had been intended; it showed, however, no sepsis. The organisms from post-mortem spleens are usually very abundant and of the *B. coli* type; in this spleen, however, two-thirds of the culture-tubes were sterile, the others showed a Gram-negative cladothrix type of organism with punctate thickening, growing very delicately on agar. One of these cultures was kept going for several months, but ultimately died out. On agar slope it showed five separate dew-drop colonies which, by transmitted light, were slightly opaque. It was non-pathogenetic to guinea-pigs and mice. The length of time that elapsed before a bacteriological examination largely invalidates the findings as evidence of the causation in this case, but the fact of finding a cladothrix of such cultural character is unusual if it were a post-mortem contamination from the bowel.

2. A male, aged 34, admitted to this hospital under Dr. Robert Hutchison for indigestion, repeated hæmatemesis, and an enlarged spleen. Mr. A. J. Walton removed the spleen and had it sent to me direct for culture. There was a history of enteric during the South African War. The anæmia was of a pronounced secondary type, and the W.R. negative. The spleen showed slight thickenings of the capsule where there had been adhesions. The cross section was a dull red with a firm pulp. Malphigian bodies and trabeculæ could be seen, and the latter appeared not to be thickened. In all sections could be seen pin-head areas of hæmorrhage in connexion with trabeculæ. Microscopically there was general cellular hyperplasia and increase of fibrous tissue. The trabeculæ showed hæmorrhages and the Malphigian bodies were diffuse. No portions infiltrated with iron pigment were seen. Culture of the hæmorrhagic areas proved to be positive in 10 out of 15, the remaining 5 being sterile. All the cultures tested after several sub-cultures were the same, a Gram-negative non-sporing bacillus very variable in length up to four times the diameter of a red cell and uniformly thick. The longer forms were bent or curved and some showed septa and dot-like refractive granules. The ends were rounded. Some of the smaller bacilli were actively motile. They tended to adhere in clumps from the edges of which long forms are seen projecting. True branching was not observed. On agar it grew as a thin whitish opales-

cent fibre recalling that of paratyphoid B; in broth there was a general turbidity with some deposit later. Gelatin was not liquefied; milk was slowly coagulated; lactose and glucose were fermented with the production of acid and gas. Neutral red lactose broth was changed to fluorescent yellow in 48 hours and became carmine red in ten days. It was aerobic and non-sporing. The organism was pathogenic to rabbits but not to guinea-pigs by intraperitoneal injection. Rabbits by this method of inoculation died in 24 hours to three weeks and there is a well-marked slight peritonitis from which the organism can readily be recovered. Cultures of this organism were kept alive for two years; it then died out despite repeated efforts to revive it. Though this organism has motile elements and has no capsule its nearest kinsfolk appear to be the Friedländer group of organisms.

CONCLUSION.

It is not my purpose to explore the ætiology of the other clinical groups of splenic inflammation, for as you will recognise from what has been said, in most groups our knowledge is still incomplete. I hope it will be clear, however, that it may be possible in any case to get evidence pointing to one or other ætiological group. I have tried to show that splenic disease as such may cause many symptoms and that the ultimate ætiological subdivisions will not necessarily harmonise with the temporary subdivisions based on clinical observation alone. It is only in hospitals like this that opportunities present themselves for the real solution of these problems, and even in this hospital I imagine the removal of a spleen by the surgeon is not an everyday occurrence. Yet if all such spleens could be examined by a bacteriologist of some years' experience and the reports collated, what an array of evidence would be put out for gaining adequate proof of the ætiological causes.

My thanks are due to those gentlemen in this and other hospitals who have given me opportunities that I did not otherwise possess, and who have allowed me to use the clinical notes of their cases.

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SOME ASPECTS OF THE TREATMENT OF ACUTE SUPPURATION.

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ALTHOUGH enormous experience was gained in the war as a result of the views put forward by different schools of thought, mainly concerning the details of chemistry and bacteriology of septic wounds, yet I venture to suggest that the fundamental principles of treatment were somewhat obscured, and that the lessons learned then are not now sufficiently applied in dealing with acute septic conditions of civil life. The prominence given to several very attractive but accessory lines of treatment, such as antiseptics, tissue-solvents, serums, artificial hyperæmia, has tended to divert us from consideration of certain of the main principles. In no way is it my purpose to depreciate these adjuncts to treatment, whose great value and importance are generally recognised. But it should be realised that they are only additional means of attack after the main defences have been perfected as far as possible.

"*Relief of Tension.*"

In a different manner the constant use of the word "drainage" has given rise to the idea that drainage is the chief and most important factor in the treatment of suppuration. Further, in the endeavour to secure "drainage" the drainage-tube per se has become an idée fixe. If by a different phrase it is possible to alter the conception of a treatment, I would suggest that the word drainage be eliminated and replaced by "relief of tension." The latter phrase does not suggest to the mind a means of drainage, but rather implies an opening, a line of least resistance in the direction of safety, along which the products of inflammation may escape.

The inflammatory process will take the line of least resistance, whether along lymphatics, blood-vessels, fascial planes, or towards the exterior of the body, and our main object is to make it follow the latter line. In "relief of tension" and in the creation of a "line of least resistance" we thus fulfil a fundamental principle in the treatment of acute septic conditions. The relief must be complete and the line must be maintained, and it is in the maintaining this line that the chief difficulties of technique arise, which will be referred to in their proper sections. Nature, assisted in this way, will create her own drainage, and will gradually cast out the debris of dead tissue which is in itself harmless, except as a suitable soil for the growth of organisms.

Immobilisation.

The second great principle of treatment was enunciated by John Hilton in the following sentence: "Every deviation from the necessary state of rest brings with it, through pain, the admonition that the patient is straying from the condition essential to his restoration." This stands as a profound truth, and in applying it to the treatment of suppuration it is merely necessary to emphasise the word rest or replace it by immobilisation. Only by completely immobilising an inflamed part are the natural agents given a chance to form their barriers against spread of inflammation and to deal locally with its cause. The word immobilisation implies, at any rate, in the case of the limbs, the necessity for an efficient splint. When there is suppuration in the chest or abdomen we can endeavour to assist, or at least refrain, from interference with the natural efforts to maintain the condition of rest. There has been always a tendency to regard the treatment of acute suppuration in different parts of the body from separate view-points. The physiology and pathology are essentially the same whatever tissue is involved, and the principles of treatment do not differ except in the minutiæ of detail. Apparently various pyogenic organisms have

their preference for a particular soil, but the reaction of the local tissues and the general protective mechanism of the body do not alter, whatever may be the type of infecting agent.

The two great principles, therefore, that underlie the treatment of all acute inflammatory conditions are: (1) the relief of tension and its maintenance; and (2) absolute rest.

A third principle of scarcely less importance is the avoidance as far as possible of super-infection, meaning by this that during any necessary operation or post-operative dressings the strictest asepsis must be maintained. Further, in the treatment of the wound itself, much assistance can be derived from the use of chemical agents to promote the separation of dead tissue or to stimulate the natural reaction of the healthy tissue, while the bacteriologist has supplied powerful means to increase the resistance of the blood. It is not my intention here to deal with the treatment of sepsis resulting from a wound of the soft tissues or bones. The main effort in any injury is to avoid sepsis by an early excision of the damaged tissues, followed by closure of the wound and efficient splinting; but should infection occur there is no difference between its treatment and that of other acute inflammations.

Acute Suppuration of the Soft Tissues of the Limbs.

In every case, when first seen, the affected limb should be immobilised at once, and immobilisation can only be secured by an appropriate splint. While for the fingers a straight forearm or internal angular splint may suffice in any spreading infection, a Thomas's arm or leg splint is the most satisfactory. From the patient's view-point the application of a large splint for what appears perhaps a trivial lesion may seem unnecessary; but the apparently trivial lesion has immense possibilities for danger; fingers, limbs, lives have been lost through neglect of this precaution in the early stages. In the majority of cases it will be found that the spread of infection can be controlled by this means. The question of when and where to make an incision in an inflamed area for the relief of tension is sometimes difficult. If by splinting the spread is controlled and becoming localised, my impression is that it is better to wait for the formation of pus before incising. If the inflammation is localising itself the main danger has passed, and with the limb at rest further spread is unlikely. The formation of pus is a healthy sign that the tissues are reacting strongly. When it has formed an incision of the same length as the abscess cavity is made, care being taken that the whole cavity is exposed, but no fresh tissue planes are opened up. The size of the cavity may demand more than one incision. The splint should not be discarded until all signs of sepsis have disappeared and the wound has commenced to heal.

In those cases of acute septic inflammation of a limb, when in spite of immobilisation there is no effort to arrest the spread and no indication of suppuration, one or more incisions over the areas of greatest tension are of the utmost value. Such incisions should open the skin, subcutaneous tissue and deep fascia, and should correspond closely with the areas of maximum tension, thus avoiding laying open fresh tissues to infection. Provided the selection of the site has been carefully made, the value of an opening to relieve the tension and to give the tissues a greater chance of reacting is very great, and may be extended in certain cases to the true forms of non-suppurative inflammation. All such incisions almost invariably become septic and are dealt with in the usual way. There is the occasional case when, in spite of every precaution, the infection passes beyond the limb into the general circulation, owing apparently to an entire failure of tissue reaction. It is here that the bacteriologist may save life and limb, though this remark by no means suggests that his services should be neglected in the less severe cases.

Acute Suppurative Osteomyelitis.

The primary object in all cases of acute bone inflammation must be to lay open at once the whole of the infected area in order to relieve tension. In every case the bone cavity must be opened. Often it is difficult to judge to what extent this should be done. If there is subperiosteal pus the extent of the opening into the medullary cavity should correspond with that of the stripping up of the periosteum. In those cases when the pus is confined to the medullary cavity—the most acute and fortunately more uncommon type of case—a wide opening should be made in the bone. My impression is that drastic treatment is safer in all cases, since even if healthy medulla is opened and becomes infected, this involves less risk than does an inadequate opening, while a line of least resistance is provided. Afterwards the limb must be completely immobilised by means of a Thomas's splint and cross-strapping, the strapping being arranged so that the dressings may be carried out with the minimum disturbance and pain, and the whole limb being suspended from an overhead frame. In these cases intermittent or continuous irrigation is valuable, chiefly because thereby painful dressings can be avoided. A fairly wide experience of these cases has led me to take a somewhat pessimistic view of them. If the immediate dangers are successfully overcome the subsequent prolonged and unavoidable sepsis is a big strain on the patient. To avoid this strain some have advocated an immediate subperiosteal resection of the infected area of diaphysis with almost complete closure of the wound, followed by the application of extension to the limb in order to maintain its length until the new bone has formed. My experience of this method is too limited to allow me to express an opinion on it, either for or against, but I believe it to be based on sound surgical principles. Sometimes, when faced with a severe case, I have been in doubt whether to perform an immediate amputation. After much hesitation, and finally deciding against it, I have in the end sincerely regretted my decision. The idea of amputation is repellent and not likely to appeal to anyone as a primary measure; on the other hand, amputation in such cases can be considered unjustifiable only on the guarantee of thorough relief of tension and true immobilisation. There is yet one more variety of diaphysitis in which, owing to the position of the epiphysis, a joint is directly involved. Here the conditions are the same as in an acute suppurative arthritis, and are to be treated as such (vide infra). The issue of such a case is, however, complicated by the inability to remove the focus of infection. Suppuration continues and a sinus is inevitable until the necrosed tissue has separated. Although the ultimate outlook for the joint is doubtful, as soon as the acute stage has passed our chief object must be to encourage movement.

Acute Suppurative Arthritis.

While it is not possible to correlate in one short paragraph the pros and cons of treatment in joint suppuration, a short reference is necessary because, at first sight, it appears as if the principle of immobilisation requires modification. The essential function of a joint is to move, and this fact must never be lost sight of. Hence treatment must satisfy two apparently opposed demands, immobilisation of the joint and preservation of this essential function of movement. A joint is immobilised not so much by keeping the limb at rest as by a separation of its articular surfaces; if it is possible to maintain this there is no reason why early active movements of the infected joint may not be carried out with a view to hindering the formation of adhesions in and around the joint. Extension, then, is our main method of immobilising a joint, and this should be powerful and continuous until the active suppuration has passed. When considering the means of relieving tension in a joint, we must bear in mind the possibility of an attempt on the part of the synovial membrane

to localise the infection. If any such attempt has taken place its object is defeated by extensive opening of the joint cavity. Therefore, provided true immobilisation of the joint be maintained, it is better to rely on aspiration, or if there is no immediate urgency to deal with fluid or collections of pus by aspiration or incision as occasion arises. In those cases of generalised suppuration of a joint an incision should be made of sufficient extent to allow free evacuation of the pus, and the wound should be closed at once. Further accumulations should, as far as possible, be dealt with by aspiration.

Acute Suppurative Peritonitis.

There is no essential difference between the treatment of acute suppuration in the peritoneal cavity and elsewhere in the body. The same principles hold good, but perhaps are more difficult in their application. While it is a comparatively easy matter to relieve tension in the abdomen, it is a more difficult thing to maintain the relief. At the same time the defensive mechanism of the abdomen against inflammation and its power of localising it is more highly developed than anywhere else in the body. The omentum and peritoneum are wonderfully efficient in the way they attempt to shut off an inflammatory process, and one of our main objects must be to interfere with their work as little as possible. In children this resistance is markedly less than in the adult. The main treatment in any case of abdominal suppuration consists in opening the abdominal cavity. If the diagnosis is uncertain a median or para-median incision is to be made, but if there is reasonable certainty in the diagnosis the incision should be placed directly over the primary source of infection. If an acutely inflamed appendix is palpable, the incision should be immediately over it, otherwise over its usual site in the right iliac fossa, but not towards the mid-line, where the barrier immediately surrounding the inflamed area must necessarily be interfered with. In the case of an abscess in the leg no one would make an incision well to one side of it, thus opening up resisting planes of tissue in order to reach the abscess. The same consideration applies when dealing with the abdomen; we must achieve our purpose at the cost of a minimum disturbance of surrounding healthy and protective tissue. By opening the abdomen, removing the source of inflammation, if possible, and gently removing the pus the immediate tension is relieved. Then it is largely a matter of judgment as to whether the abdomen should be closed and the patient asked to deal with the remainder of the inflammatory process.[1] In all cases where closure is decided upon I would employ interrupted sutures in the peritoneum, aponeurosis, and skin respectively, with a fair interval between them. This allows certain lines of least resistance from the peritoneal cavity; also, should sepsis occur in the wound, individual sutures can be removed.

In cases of spreading or generalised peritonitis the relief of tension must be maintained. The simplest way to accomplish this is to leave the abdominal wall widely open. In children this can be done, but in adults the inevitable protrusion of the gut constitutes a danger and necessitates partial closure. If tubes are inserted it must be on the understanding that their purpose is not "drainage," but an attempt to create at least a temporary track or line of least resistance. Tubes should be left out after 48 hours at most; after this they serve no useful purpose, and are apt to irritate the inflamed intestine and to act as a path for fresh infection from the outside. It is my impression that one incision only should be made in the abdominal wall, and if well placed it will suffice. I believe that stab-punctures elsewhere on the abdomen are not only useless but harmful. They are not of sufficient size to assist in the relief of tension, while they open up new tissue to infection either at once or by the presence of the tube which is inserted. It is better always to make all the paths of least resistance lead to one opening. In cases of pneumococcal peritonitis, if it is possible to diagnose them as such at the time, the abdomen should be closed by interrupted sutures after removal of the free fluid. One is dealing here with a local manifestation of a general infection, and it is of the greatest importance to avoid super-infection. As a rule the involvement of the lungs (perhaps the meninges or joints) becomes manifest after a varying interval of time, and careful watch must be kept for a collection of pus either above or below the diaphragm.

Immobilisation of the abdomen in the strict sense of the word is not possible. Nevertheless, a very great natural effort in this direction is brought into play as soon as any inflammatory process commences in the peritoneum by the arrest of the movements of the abdominal wall and the intestines. This arrest gives the omentum and peritoneum their chance of localising the inflammation and of building their barriers against its spread. The staying of the intestinal movements, although at first physiological and helpful, gradually becomes in the generalised peritonitis the fatal factor by reason of an increasing paralysis and consequent obstruction. In the later stages, also, the muscles of the abdominal wall become paralysed and flaccid. If this stage has been reached before operation the outlook is almost hopeless. The toxæmia has been too prolonged or too powerful. In the earlier stages, however, until tension is relieved the abdominal muscles are kept still and in spasm, and in this condition an incision will more or less maintain the immobility, while the spasm will cease with the relief of tension. Abdominal rigidity implies tension.

As little as possible should the condition of rest of the intestines be disturbed. Drastic purgation, if successful, produces violent movement, while it may induce a paralytic condition through too heavy demands on an already tired mechanism. With tension relieved the intestines will try to carry on their normal functions again, but, as a general rule, they require some assistance in this. Whether pituitary extract has a direct "tonic" action on the intestinal muscle I am unprepared to say, but its value in the acute abdominal conditions alone, or with the aid of enemata is very great. In the case of peritoneal suppuration, with much distension of the intestines, I have found injections of pituitary extract given two hourly from the time the patient is returned to bed, followed by an enema after three or four injections, a most valuable line of treatment. If the first enema produces no result the injections are continued and enemata repeated. This method does not produce violent peristalsis or purgation and it saves the patient much discomfort. Further, it seems to diminish the flatulent distension very markedly, and it is uncommon for patients to complain seriously when thus treated. Flatulence, besides causing much distress and pain, is a danger, as the distension and turmoil of the intestine disturbs the condition of rest; its presence indicates probably some degree of paresis of the gut, and its persistence is liable to increase this.

Acute Suppurative Pleurisy: Empyema.

The same principles of treatment already laid down apply in cases of suppuration in the chest, and their application requires modification only to meet the particular circumstances. In no situation, perhaps, is it so simple to produce and maintain a relief of tension, but in its maintenance the very definite and serious complication of super-infection has to be met. It has been the aim of treatment of recent years to avoid this. If it is possible to give unremitting attention an empyema can be treated by aspiration alone. After the initial aspiration the local and general conditions will immediately improve, and in the exceptional case this improvement will continue without further aspiration being required. As a rule, however, two or more aspirations are

[1] See H. Wade, Opening Address, Section of Surgery, B.M.A., THE LANCET, August 6th, p. 282.

necessary, and these should be done as soon as the signs point to a further collection of pus. For routine treatment this method is necessarily somewhat difficult besides being rather uncertain, but in bilateral empyemata it is of great value. The method of opening and completely emptying the abscess cavity is not only quicker and more certain but also safer, provided that in a case presenting grave constitutional symptoms a preliminary relief of tension by aspiration renders the condition suitable for an operative procedure. After emptying the cavity of pus the question of completely closing the chest wall again must be decided on the merits of each individual case. If, however, signs supervene of further suppuration and rise of tension aspiration is performed or the incision re-opened.

The generally accepted method, therefore, of opening an empyema by resection of a portion of a rib and maintaining the opening by the insertion of a tube is probably the simplest, provided that in all cases the opening is made at the lowest limit of the abscess cavity. The tube, however, here as elsewhere, provides a very sure path for the entrance of fresh organisms. Consequently if this method is employed every precaution must be taken to prevent super-infection. This purpose is best attained first by using a long tube, whose free end is carried into a vessel containing some antiseptic; secondly, by fixing a Carrel tube around the tube entering the chest wall (Dean). With this arrangement the long tube may be removed after 48 hours, intermittent irrigation of the wound being continued till healing has commenced.

In the early stages of suppuration in the chest, by arrest of the movements of the diaphragm and chest wall and diminished expansion of the lung, a condition of immobility is brought about. Unless the tension is relieved a paralysis ensues, and if the abscess cavity is then opened and emptied the lung fails to re-expand. It gradually becomes anchored by the formation of dense adhesions which at a later stage, in spite perhaps of recovery of the lung itself, will prevent its expansion. What, therefore, as in the abdomen is primarily a physiological action becomes a pathological danger through delay. As soon as tension has been relieved in the chest by liberation of the pus the lung requires some assistance to resume its normal function, which can be best rendered by routine breathing exercises under open-air conditions.

These remarks may invite criticism on the score of lack of originality, and may appear very elementary; my object has not, however, been to put forth any new ideas, but rather to recall to mind and strongly emphasise a few fundamental principles that must be applied to the early treatment of all such conditions of suppuration as may constitute emergencies of daily practice. Whatever the type and situation of a suppurative process, and whatever additional means of treatment may be indicated, a successful issue must depend directly and primarily upon the application of these principles.

FOREIGN DECORATIONS FOR WAR SERVICES.—The King has granted permission to the undermentioned to wear the following decorations, which have been conferred in recognition of valuable services rendered during the war: Legion of Honour—Cross of the Chevalier: Sir W. Arbuthnot Lane, Colonel Sir A. W. Mayo-Robson, Sir StClair Thomson, Sir Sydney Beauchamp, Dr. E. W. Ginner, Dr. H. J. Moore Playfair, Dr. G. C. L. Vintras, and Mr. D. d'Auvergne Wright. Crown of Italy—Cross of Commander: Sir Ernest Hodder-Williams.

NEWCASTLE-ON-TYNE AND NORTHERN COUNTIES MEDICAL SOCIETY.—The first meeting of the session was held in the Royal Victoria Infirmary on Oct. 13th, Mr. S. S. Whillis, the President, being in the chair. The following cases were shown and discussed:—Dr. T. Beattie: Polycythæmia, Myelogenous Leukæmia, Pernicious Anæmia. Dr. Horsley Drummond: Myelitis, Aortic Aneurysm, Disseminated Sclerosis. Dr. D. W. Patterson: Infective Endocarditis, Erythromelalgia, Banti's Disease. Mr. J. W. Leech and Mr H. M. Johnston: Cases Illustrating Sarcoma.

ARREST OF AURICULAR FIBRILLATION BY THE USE OF QUINIDINE.

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Introduction.

IN the Oliver-Sharpey Lectures for 1921 Sir Thomas Lewis, describing his researches which have done so much to elucidate the mechanism of the production of auricular fibrillation and flutter, pointed out the relatively simple task involved in the treatment of these conditions and foreshadowed its solution. He showed that they depended on circus movement, and that to arrest the process all that was required was to bridge the gap between the head and tail of the circulating wave, a gap which was in point of time only 1/50th of a second and in point of distance only 10 mm. of muscle. While Lewis [1] had been pursuing these researches which led so logically to a method of attack, Frey, working in Kiel, had been investigating empirically the problem of the treatment of auricular fibrillation. In 1914 Wenckebach [2] reported the arrest of auricular fibrillation in a single patient by the use of quinine, g. i. per diem. The effect was only temporary. Stimulated by this observation Frey investigated the effect of quinidine, another alkaloid of cinchona, and in 1918 [3] reported his results in the treatment of 22 cases. In 50 per cent. of these satisfactory results were obtained, and a normal cardiac rhythm restored. In a later communication Frey [4] reported his results in 50 cases; in 42 per cent. fibrillation was arrested. He recommended the use of 0·4 g. quinidine by mouth, three times a day, for from six to eight days, beginning with half this dose and increasing gradually to 1·2 g. daily. If cardiac failure is present, compensation should first be restored by the use of digitalis. Then, after suspension of digitalis for one week, quinidine may be given. He states that patients in whom the fibrillation is of recent origin respond best, that a much dilated heart cannot—or can only temporarily—be brought back to its normal rhythm, and that those not responding to digitalis are refractory to quinidine. In several cases the fibrillation was changed by the use of quinidine into auricular flutter.

In two patients under treatment with quinidine Frey noted what he calls temporary cerebral paralysis with sudden cessation of respiration; both cases recovered in the course of a few hours. He considers the effect to be due to a toxic action of the drug in a patient with a drug idiosyncrasy, and advises a preliminary test with small doses in all cases to determine the occurrence of such idiosyncrasies. Schott [5] has shown in experiments on animals that intoxication with quinidine leads to sudden cessation of the respiration. Bergmann [6] has reported the results of treatment in 9 cases of auricular fibrillation; in 6 a normal rhythm was secured, in 2 the fibrillation changed to flutter. Klowitz [7] treated 15 patients, and in only one did he succeed in obtaining an arrest of fibrillation. Benjamin and v. Kapff [8] have treated 27 patients. In 18 fibrillation was arrested. In 5 of the 18 successful cases there was a relapse, with return of fibrillation, which again disappeared with further treatment; in 13 of the 18 a temporary tachycardia occurred before the normal rhythm was restored. In one patient the effect appeared unfavourable, and there was increasing failure and death. These authors call attention to the possibility of embolus resulting from the restored auricular contraction, and report one instance of lung embolism and one case of sudden death which they think was probably also due to embolism. They suggest that

the two cases of sudden respiratory failure described by Frey may have had a similar causation. Faber [9] has reported two cases with favourable results, and Levy [10] two successful results out of four cases treated, of which one relapsed.

The most recent communication is that of Jenny [11] who was able to stop fibrillation in 17 out of 18 cases. He states that in most instances the pulse has remained regular, but as the longest period of observation was only five months, obviously no statement as to the permanency of the cure could be made. He used from 0·5 g. to 15·5 g. in different cases, and says that it may be necessary to give the drug continuously or to repeat the courses; doses of 0·5 g. quinidine were given three times a day and found to be safe up to 2 g. to 3 g. The drug should be stopped at the least sign of disturbance in sight or hearing.

The purpose of this communication is to call attention to these observations, and to make a preliminary report of our results in the treatment of seven cases of auricular fibrillation.

CASE 1.—F. M., female, No. 43343/1921, aged 58, housewife. Mitral stenosis, auricular fibrillation. Three attacks of acute rheumatism in childhood. Then quite well until eight years ago; then a sudden attack associated with dyspnœa, palpitation, and partial loss of consciousness; since then has always suffered from shortness of breath and palpitation. A similar attack seven years ago. Subsequently admitted to an infirmary with swelling of legs and abdomen, and paracentesis abdominis was performed. Sudden attack two and a half years ago, with complete loss of consciousness, following which she came to the London Hospital as an out-patient. Since then auricular fibrillation has been constantly present, and courses of digitalis have been prescribed. Patient was admitted to the London Hospital August 2nd, 1921.

Condition on Admission.—Poorly nourished, rather wasted woman; no cyanosis, œdema, or dyspnœa; pulse absolutely irregular in volume and frequency, rate very variable at wrist, 62–112. Blood pressure: systolic 160, diastolic 96. Heart moderately enlarged to left; apex beat diffuse and wavy; systolic murmur at apex conducted outwards; pulmonary second sound accentuated. A polygraph tracing taken on August 4th, 1921, showed complete irregularity of both radial and jugular pulses, and absence of *a* waves.

Treatment and Progress.—On August 6th, quinidine gr. v. t.d.s. started. On the 11th, pulses perfectly regular, rate 50–60; no pulse deficit; a loud rumbling diastolic murmur not previously heard was present at the apex. Little change in the patient's objective condition, but she stated that the fluttering sensation in her chest constantly present for the last two and a half years had completely disappeared. On the 12th, quinidine discontinued; on the 13th, sudden onset of pain in left loin followed by four stools and hæmaturia. A little later pain in right upper abdomen; on examination tender palpable left kidney; diminished breath sounds and crepitations at right base; pulse still regular. On the 17th, condition improved; pain had gone, hæmaturia had ceased; occasional irregularity of pulse suggesting extra systoles. On the 18th, pulse completely irregular in volume and frequency; polygraph tracing showed complete irregularity of radial and jugular pulses with absence of *a* waves (see Fig. 1). On the 19th quinidine, gr. v. t.d.s., was started at 7.45 A.M.; at 9 P.M. patient suddenly complained of numbness and inability to move left leg. On examination, leg was cold; pulsation absent in dorsalis pedis but present in femoral artery; tendon reflexes were normally active; no disturbance of sensation; pulse completely irregular; diastolic murmur at apex had disappeared. On the 20th, leg warmer; good pulse in dorsalis pedis. On the 21st, tachycardia 130–140; pulse more regular. On the 22nd, tachycardia still present; polygraph tracings showed irregularity of radial and jugular pulses with absence of *a* waves. On the 23rd, pulse absolutely regular; tracings showed regular radial and jugular rhythms, and presence of *a* waves superimposed on *v* waves in the jugular pulse tracing. On the 24th, pulse-rate very variable, 76–112; polygraph tracings again taken; normal rhythm with presence of *a* waves. On the 29th, intermittent tachycardia continued. Tracings showed regular radial and jugular rhythms, *a* waves present and superimposed on *v* waves (see Fig. 2). Considerable improvement in patient's general condition. Complete absence of palpitation. A loud crescendo presystolic murmur was now heard at the mitral area. The pulse continued regular and on the 31st quinidine was reduced to gr. v. one dose a day. On the same night between 10 P.M. and 12 midnight the pulse became absolutely irregular. At 2 A.M. on Sept. 1st the pulse was regular and remained so until 10 A.M. on the 2nd, when it again became absolutely irregular. At the same time the presystolic murmur disappeared from the mitral area.

Summary.—A case of auricular fibrillation of about two years' duration. Reacted well to digitalis when under out-patient treatment and admitted fully compensated. Quinidine by the mouth was started and fibrillation ceased with return to normal rhythm on the fifth day after a total amount of gr. xcv. had been administered. The quinidine was discontinued and embolic infarction of left kidney and right lung occurred while the pulse remained regular. Six days after the quinidine was stopped fibrillation set in again; quinidine was at once re-administered and embolism of the left popliteal artery occurred before the heart returned to its normal rhythm. After four days of quinidine administration and when a total amount of gr. lx. had been given auricular fibrillation gave place for a second time to normal rhythm. Quinidine was then reduced and fibrillation recurred, but reverted to a normal rhythm in two hours, fibrillation again recurring eight hours later. Return to normal rhythm after fibrillation was proved by polygraph tracings and the appearance of a presystolic murmur.

CASE 2.—C. G., female, No. 43343/21, aged 32, housewife. Mitral stenosis, auricular fibrillation, myocardial failure. The patient was quite well until 21 months ago, when she had a "stroke" in the night, and on the following morning was found unconscious in bed with paralysis of the right side and later aphasia. She was admitted to Tottenham Hospital; ever since the attack patient had complained of shortness of breath, cough, and palpitation. Two weeks ago shortness of breath, cough, and palpitation became worse, with swelling of abdomen and legs. No history of rheumatic fever, chorea, or rheumatism.

On Admission.—August 4th, 1921, extreme dyspnœa, orthopnœa, and cyanosis; pulsation of congested veins of neck. Almost pulseless; pulse-rate almost uncountable at apex beat, but absolutely irregular in force and rhythm; apex beat 6¼″ from mid line; systolic murmur at apex beat conducted outwards. Accentuated pulmonary second sound; liver and spleen palpable; ascites and œdema of legs; old right hemiplegia. Immediate treatment: oxygen, intravenous strophanthin, venesection, and digitalis. Rapid improvement.

Treatment and Progress.—On the 8th, pulse 80; absolute irregularity in volume and frequency. Apex beat 4 inches from mid-line; no ascites; no œdema. On the same day, fully compensated when at rest in bed. Polygraph tracing shows complete irregularity of radial and jugular pulses with absence of *a* waves (see Fig. 3). On the 19th quinidine, gr. vii. t.d.s., started. On the 20th, after four doses of quinidine (i.e., gr. xxx.), pulse perfectly regular, rate 70–80; loud crescendo presystolic murmur now heard at apex beat. On the 22nd, pulse regular, polygraph tracing showed absolute regularity of radial and jugular pulses and the presence of *a* waves on the jugular pulse-tracings (see Fig. 4). On the 28th, pulse slow and regular; loud crescendo presystolic murmur at apex beat. Occasional extra-systoles not transmitted to radial pulse; polygraph tracing shows normal rhythm with no extra-systoles and presence of *a* waves; considerable improvement in general condition; complete relief from palpitation. Quinidine reduced to gr. vii. once a day. On Sept. 5th, pulse still regular; polygraph tracing showed presence of *a* waves.

Summary.—Admitted with failing compensation; reacted well to digitalis. Return to normal rhythm 36 hours after commencement of quinidine administration, and after a total dose of gr. xxx. had been given. Quinidine reduced to gr. vii.ss. once a day. Rhythm remained normal. Return to normal rhythm proved by polygraph tracings and the appearance of a presystolic murmur.

CASE 3.—R. N., male, No. 33071/21, aged 36, carman. Aortic and mitral incompetence, auricular fibrillation, myocardial failure. Acute rheumatism seven years ago; second attack six years ago; then well until two years ago, when he was admitted to London Hospital with complete irregularity of pulse, mitral systolic and aortic systolic and diastolic murmurs, enlargement of liver, ascites and œdema of legs. Since then always suffered from shortness of breath, palpitation, and swelling of legs.

On Admission.—August 18th, 1921, cyanosis, dyspnœa, and palpitation; no ascites or œdema of legs; apex beat 1 inch outside nipple-line; systolic murmur at mitral area; systolic and diastolic murmurs at aortic area. Pulse irregular in volume and frequency. Polygraph tracing showed complete absence of *a* waves and absolute irregularity of radial and jugular pulses (see Fig. 5). On the 20th, patient much better; pulse still irregular; compensated at rest in bed. Quinidine gr. vii.ss. started t.d.s. On the 24th, pulse still irregular; quinidine gr. x. t.d.s. At midnight 25th–26th, pulse regular; bradycardia; tracings taken showed normal rhythm of radial and jugular pulses with *a* waves present (see Fig. 6). Considerable improvement in patient's general condition. No palpitation. Murmurs unchanged. Quinidine reduced to once

Charts showing Fibrillation Before Quinidine.

FIG. 1 (Case 1).

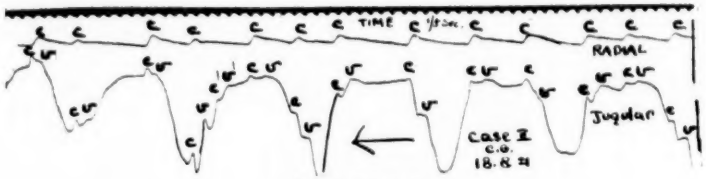

FIG. 3 (Case 2).

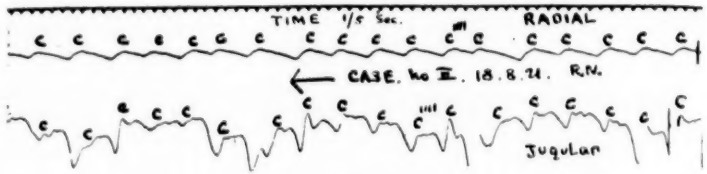

FIG. 5 (Case 3).

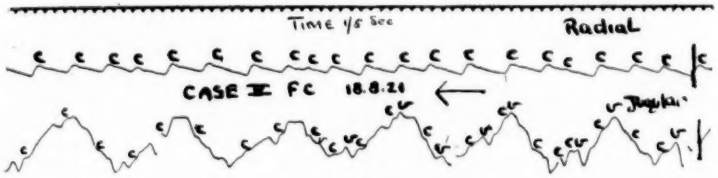

FIG. 7 (Case 4).

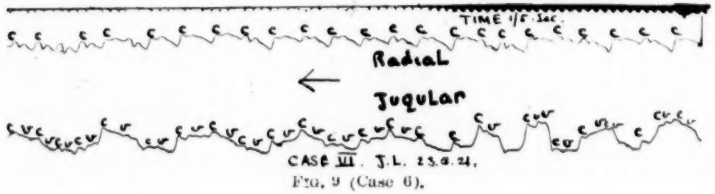

FIG. 9 (Case 6).

Charts showing Normal Rhythm After Quinidine.

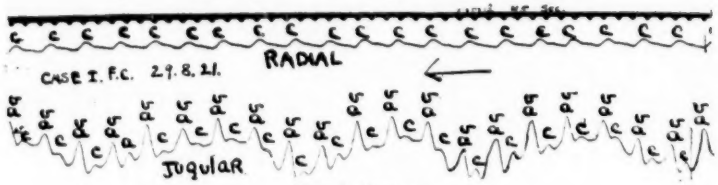

FIG. 2 (Case 1).

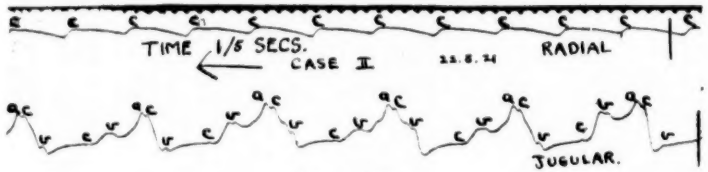

FIG. 4 (Case 2).

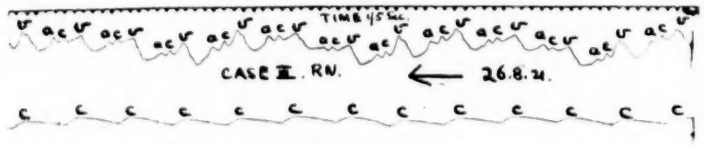

FIG. 6 (Case 3).

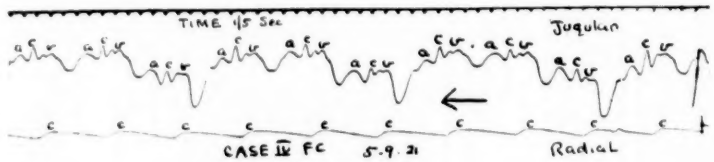

FIG. 8 (Case 4).

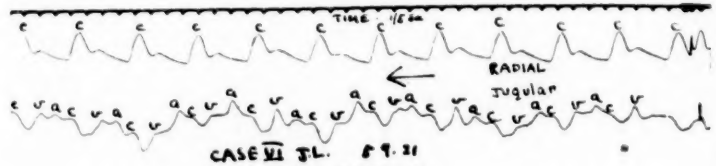

FIG. 10 (Case 6).

a day. On the 27th, sudden onset of pain in left side; no physical signs in lungs; spleen not palpable, but tenderness on palpation under left costal margin; probably splenic infarction. On the 29th patient felt very well; pain completely gone; no palpitation. Polygraph tracings showed complete normal rhythm.

Summary.—Auricular fibrillation of two years' duration, admitted with failing compensation; reacted well to digitalis; return to normal rhythm five days after commencement of quinidine administration and after a total amount of 157 gr. Embolic infarction of spleen 24 hours after return to normal rhythm; quinidine reduced to gr. x. once a day; remained regular.

CASE 4.—F. C., No. 4335/21, aged 45, housewife. Auricular fibrillation, mitral incompetence, myocardial failure. Had chorea 35 years ago; three attacks of acute rheumatism 24–19 years ago, since when she has always suffered from shortness of breath, palpitation, and præcordial pain. Admitted to the London Hospital 15 months ago, eight and a half months pregnant, with auricular fibrillation, severe dyspnœa, ascites, and œdema of legs. Reacted well to digitalis and passed successfully through a normal labour, giving birth to a live child; since then has been attending as an out-patient; auricular fibrillation constantly present.

On Admission.—August 2nd, 1921, poorly nourished woman; congested facies, dyspnœa, orthopnœa, and cyanosis. Pulse absolutely irregular in volume and frequency; heart moderately enlarged to left; mitral systolic murmur and accentuated pulmonary second sound. Congestion and œdema of lungs; palpable liver; ascites and œdema of legs.

Treatment and Progress.—Immediate treatment, digitalis, to which the patient responded well; this was stopped after nine days on account of nausea. On the 18th the patient was much better; œdema and ascites were absent; pulse-rate was much less and pulse deficit reduced. Polygraph tracings revealed absolute irregularity of radial and jugular pulses with absence of *a* waves (see Fig. 7). On the 19th quinidine, gr. v. t.d.s., was started; on the 24th digitalis was re-started on account of tachycardia; on the 31st quinidine was increased to gr. x. t.d.s. Frequent polygraph tracings revealed the persistence of fibrillation and the absence of normal rhythm, and this condition continued up to Sept. 2nd, when, however, the patient's general condition was much improved, and a completely irregular rhythm seemed to have given place to one in which phases of comparative regularity alternated with phases of tachycardia, but polygraph tracings failed to reveal presence of *a* waves. On the 3rd digitalis was stopped. On the 5th at 6 A.M. the pulse was absolutely regular and continued so all day. Polygraph tracings showed a completely regular cardiac rhythm with presence of *a* waves (see Fig. 8).

Summary.—A case of auricular fibrillation of about 15 months' standing which reacted well to digitalis. Normal rhythm was restored after quinidine had been administered for 18 days and a total quantity of 315 gr. had been given.

CASE 5.—S. E., No. 43563/21, aged 35, housewife. Myocardial failure, auricular fibrillation, mitral stenosis, and incompetence. Shortness of breath on exertion dating from an attack of influenza three years ago. A year and a half ago an attack of bronchitis. On first getting up after three weeks in bed, sudden loss of consciousness, followed by exhaustion, breathlessness, palpitation, and pain in the chest, which have persisted ever since. Hæmoptysis, followed by œdema of legs, nine weeks ago. No history of chorea, rheumatism, or rheumatic fever.

On Admission.—August 20th, 1921, poorly nourished, sallow woman; heart enlarged outwards and downwards; dyspnœa; systolic and diastolic murmurs at mitral area; absolute irregularity of pulse; tachycardia; a few crepitations at both bases; palpable liver; no ascites or œdema of legs.

Treatment and Progress.—Tinct. digitalis ℥xxx., four doses. After three days much better; no dyspnœa while at rest in bed. On the 22nd polygraph tracings revealed complete irregularity of radial and jugular pulses with absence of *a* waves. Quinidine, gr. vii.ss, t.d.s., was then started; but on the 27th it had to be suspended on account of diarrhœa and abdominal pain. On the 28th there was no diarrhœa or pain; quinidine was re-started. On Sept. 1st patient developed a scarlatiniform rash. On the 5th pulse was still irregular. Repeated polygraph tracings showed the continuation of auricular fibrillation up to this date.

Summary.—A case of auricular fibrillation of unknown duration which failed to be arrested by 300 gr. quinidine administered over a period of 15 days. Ill-effects observed attributable to the drug were abdominal pain, diarrhœa, and a scarlatiniform eruption.

CASE 6.—J. L., No. 33010/21, aged 37, carman. Auricular fibrillation, myocardial failure. Six months ago short of breath; five months ago his right foot suddenly went numb, cold, and white. Admitted to the London Hospital with auricular fibrillation, palpable liver, mitral systolic murmur and œdema of lungs; reacted well to digitalis and was discharged. Return of exhaustion and shortness of breath one month ago.

On Admission.—August 2nd, 1921. Well-nourished man; dyspnœa, orthopnœa, and cyanosis. Pulse absolutely irregular in volume and frequency; heart enlarged to left; mitral systolic murmur and accentuated pulmonary second sound; crepitations at both bases. Palpable liver; no ascites or œdema.

Treatment and Progress.—Reacted well to digitalis, which was stopped on August 18th. On August 23rd, 1921, polygraph tracings were taken which revealed absolute irregularity of radial and jugular pulses with absence of *a* waves (see Fig. 9). Quinidine, gr. vii.ss. t.d.s., was then started. On the 27th, quinidine was increased to gr. vii.ss. six-hourly. On Sept. 1st quinidine was increased to gr. x. six-hourly. At 4 A.M. on the 5th one dose of tinct. digitalis, ℥xxx., was given. The pulse remained completely irregular until 6 A.M. on the same day, when irregularity gave place to a normal rhythm. Polygraph tracings (see Fig. 10) demonstrated complete regularity of radial and jugular pulses with presence of *a* waves.

Summary.—A case of auricular fibrillation of about 15 months' duration which reacted well to digitalis. Normal rhythm was restored after quinidine had been administered for 18 days, when a total quantity of gr. 375 had been given. Ill-effects observed attributable to the drug were abdominal pain, diarrhœa, and profuse sweating.

CASE 7.—R. P., No. 3564/21, aged 42, housewife. Auricular fibrillation, mitral incompetence. Rheumatic fever ten years ago. Since then quite well until 18 months ago, when she started to have shortness of breath, pain in the chest, and palpitation. One year ago admitted to the London Hospital with auricular fibrillation, dyspnœa, and œdema. Did not react well to digitalis, but improved with prolonged rest in bed. Since then shortness of breath on exertion, palpitation, and præcordial pain.

On Admission.—August 20th, 1921, very obese Jewess. Short of breath; absolute irregularity of pulse; heart enlarged to left; mitral systolic murmur and accentuated pulmonary second sound. No œdema. Fairly well compensated.

Treatment and Progress.—On the 22nd tracings showed absolute irregularity of radial and jugular pulses with absence of *a* waves. The same day quinidine, gr. vii.ss. t.d.s., was started. On the 24th tinc. digitalis, ℥xxx., four-hourly, was started and continued for six doses. On Sept. 1st patient developed a scarlatiniform rash. On the 2nd, quinidine was still being administered. Polygraph tracings revealed the persistence of auricular fibrillation, and there was no alteration in the nature of the cardiac rhythm.

Summary.—A case of auricular fibrillation of about one year's standing which reacted poorly to digitalis. Quinidine (262 gr. administered over a period of 12 days) failed to produce a return to normal rhythm. Ill-effects observed, attributable to drug, were abdominal pain, pain in the back, sweating, and scarlatiniform rash.

Discussion of Results.

From the foregoing case reports it will be seen that out of 7 cases of well-established auricular fibrillation in 5 the administration of quinidine by the mouth has been associated with return to the normal cardiac rhythm. In all these five cases the change has been demonstrated by polygraph tracings, and in two of them by the appearance of a crescendo presystolic murmur at the apex. In one of these five relapse occurred soon after the drug was stopped, and again a second time when the dosage was reduced. In two the dosage was only decreased and there was no relapse into auricular fibrillation. In two of the five cases, shortly after the onset of normal cardiac rhythm, embolic infarction of internal organs occurred. The formation of clots in the appendix of a fibrillating auricle is not uncommon, and the loosening of these by restored auricular contraction and their projection into the general circulation is easily understood. The only reference we have been able to find in the literature to a similar occurrence is in a paper by Benjamin and v. Kapff, who report one instance of lung embolism and one of sudden death possibly due to the same cause. In one, tachycardia was associated with the administration of the drug. In one case an alteration of cardiac rhythm, characterised by an alternation of phases of comparative regularity with bouts of irregular tachycardia, preceded return to normal rhythm.

The pharmacological action of quinidine is still undetermined. Electro-cardiographic study has shown

that, under quinidine, alteration in both shape and size of the auricular and ventricular waves occur and are accompanied by a prolongation of the P.R. interval.[5] Hoffman [12] has shown that the excitability of the auricle of the excited heart to electrical stimulus is diminished by quinidine, and that stimuli which would normally produce fibrillation of the auricle fail to do so after quinidine has been added to the perfusate. These results indicate an effect on the excitability and conductivity of heart muscle. Lewis has pointed out that the existence of the circulating wave depends on three factors—the length of the path, the refractory period of the heart muscle, and the conductivity. It seems reasonable to suppose that quinidine abolishes fibrillation either by increasing the conductivity or by prolonging the refractory period of heart muscle, with the result that the gap is bridged and circus movement ceases.

The restoration of a normal rhythm in five out of seven cases of auricular fibrillation by the use of quinidine is of considerable physiological interest. Its practical value in therapeutics remains to be determined. We would point out from the first that the use of quinidine is not without danger, the risk of embolism being a real one. In our cases the improvement in the general condition was not striking, and much less marked than might have been anticipated, and perhaps little more than might be attributed to the prolonged rest in bed. Certainly no dramatic change in the patient's general condition occurred when normal cardiac rhythm was restored. If the drug is stopped, tendency to relapse seems to be the rule. That quinidine will take a place in the treatment of cardiac disease seems probable, but the nature of its action and the limitations of its therapeutic value remain to be determined.

In conclusion we would express our thanks to Miss Rutherford and Miss Harvey, sisters of the Medical Unit Wards, for the extra trouble they have taken in the supervision of the nursing of these patients.

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ACIDOSIS AND TOXIC SYMPTOMS OF SEVERE DIARRHŒA IN INFANCY.

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THE toxic symptoms of severe diarrhœa in infancy, especially when associated with an increased pulmonary ventilation without cyanosis, have been shown by Howland and Marriott [1] and by Schloss and Stetson [2] to be accompanied by a state of acidosis.* This so-called intoxication was found to be coincident with (1) a decreased tension of the carbon dioxide of the alveolar air; (2) an altered hæmoglobin dissociation curve; (3) an increased tolerance to sodium bicarbonate; and (4) a decreased reserve of available base in the blood plasma.

The administration of alkali has been suggested and used in treatment. In Great Britain but little attention has been paid to this group of cases. Accordingly, at the suggestion of Dr. Leonard Findlay, the present investigation into the alkali reserve of the plasma in cases of diarrhœa in infancy was undertaken.

* The term "acidosis" is used in the sense suggested by F. G. Hopkins at the recent meeting of the Section of Physiology and Pharmacology of the British Medical Association, as a diminution in the potential neutralising power of the blood.

Methods.

The estimations were made according to the "micro-method" of Van Slyke.[3] † The blood was taken by the investigator from the superior longitudinal sinus directly into a glass syringe containing a few grains of potassium oxalate (approximately 0·5 per cent. of the weight of the blood drawn). By the use of the longitudinal sinus changes in the blood due to stasis, crying, and struggling were obviated. Admission of air to the syringe was avoided. Sufficient admixture of blood and oxalate was obtained during transference from syringe to centrifuge tube, and this did not expose the blood to loss of carbon dioxide or absorption of oxygen to any greater extent than occurs with the use of the M'Rae needle as described by Van Slyke.[3] Analyses were made at once. Duplicate determinations were carried out whenever there was sufficient plasma.

The alkali reserve is expressed as the volume per cent. of carbon dioxide which the plasma binds as bicarbonate at body temperature and the normal carbon dioxide tension of the alveolar air. Corrections are made for the temperature and barometric pressure at the time of analysis and the whole reduced to standard conditions of 0° C. and 760 mm. Hg pressure.

In the present paper the term "alkali reserve" will be used in relation to the numbers expressing the cubic centimetres of carbon dioxide bound as bicarbonate in 100 c.cm. of plasma. This seems permissible as an abbreviation, for the percentage of carbon dioxide is used as a measure of the available base. Since corrections are made for the free carbonic acid in the plasma, it seems also less confusing and more exact than the use of the phrase so frequently employed, "percentage of carbon dioxide." The sugar estimations were made according to the Lewis-Benedict [4] colorimetric technique. Routine urine analyses as made by the resident physician showed neither increased glycuresis nor ketosuria.

1. *Normal Infants.*

The blood was taken, as described, from healthy breast-fed infants gaining in weight, brought to the dispensary for circumcision. As a delay of one-half to one hour between the withdrawal of the blood and the separation of the plasma and corpuscles was unavoidable, the alkali reserve is probably slightly lower than it would have been had the determination been carried out at once.‡ The number of hours after the last feed is obviously approximate. The value ranged from 43·3 to 63·3 (Table I.). This wide

TABLE I.—*Alkali Reserve of Plasma (Van Slyke) in Normal Infants.*

No.	Age.	Carbon dioxide vol. %.	Hours after feeding.	No.	Age.	Carbon dioxide vol. %.	Hours after feeding.
1	6 wk.	51·6	3	16	4 mth.	51·6	+
2	1 mth.	56·5	3	17	11 wk.	52·4	1½
3	2 mth.	53·6	3	18	9 ,,	55·0	2½
4	5 ,,	50·0	3	19	3 mth.	54·6	+
5	5 wk.	56·5	3	20	9 wk.	56·5	2½
6	2 mth.	49·7	2½	21	11 ,,	56·2	3
7	4 ,,	49·7	2	22	1 mth.	63·3	2½
8	6 ,,	49·0	?	23	4 ,,	62·2	2
9	6 ,,	43·3	8	24	7 wk.	54·8	+
10	6 wk.	54·2	1	25	5 ,,	56·4	+
11	6 mth.	53·8	1	26	1 yr.	46·8	5
12	3 ,,	54·0	2	27	1 ,,	55·5	1½
13	5 ,,	50·0	2	28	1 ,,	58·6	2
13	9 wk.	52·6	12	29	8 mth.	60·4	2½
14	3 mth.	50·7	3	30	8 wk.	53·0	2½
15	7 wk.	51·6	3				

+ = At once.

† It is realised that a certain error occurs in the separation of plasma and corpuscles, and the subsequent subjection of the plasma to alveolar carbon dioxide tension, but the smallness of the error, and the greater facility of this technique for clinical purposes, determined its adoption.

‡ Christiansen, Douglas, and Haldane [6] state that when serum and corpuscles remain in contact even for an hour there is a lowered alkali reserve of the plasma, due to ionic interchanges between cells and plasma.

variation in infancy, with a tendency to be low, has been noted before, although not explained, except perhaps by the suggestion of Marriott that the more active metabolism of infants, with its greater production of acids, may lead to a decrease in alkali reserve.

2. *Cases of Dyspepsia.*

In this group were cases with gastro-intestinal disorders of an afebrile, non-toxic variety, with more or less diarrhœa and occasional vomiting (Table II.). The alkali reserve ranged between 45·5 and 70. Cases 13 and 14 are of interest. They both received alkaline therapy before the analyses were made, and in both there was a reserve of alkali greater than is usually found in infants. This reserve gradually decreased, and the last analyses made showed a diminution below the level of safety, although there were then no symptoms of intoxication. Subsequently intoxication developed and both patients died. Three patients (Cases 12, 19 and 26) showed neither diminution in alkali reserve nor symptoms of intoxication, but died of marasmus.

There does not seem to be any relationship between the age or weight of the child, the caloric intake or the blood sugar, and the alkali reserve.

3. *Cases with Intoxication.*

There were 14 cases showing the clinical symptoms of intoxication with the typical increased pulmonary ventilation or hyperpnœa without cyanosis (Table III). Of these, one (Case 10) had a carbon dioxide combining power of 30·9 and recovered without any specific therapy. Whether this was an acidosis due to starvation or to administration of drugs before admission is not known. Improvement occurred within a few hours. Case 49, admitted with convulsions, had been starved for three days. He then developed typical symptoms of acidosis with air hunger and abundant diacetic acid and acetone in the urine. The alkali reserve of the plasma was 38. With bicarbonate of soda, 1·3 g. four-hourly, an intraperitoneal hypertonic saline injection, and an adequate caloric intake, all symptoms disappeared and the alkali of the plasma returned to normal. This was in all probability a case of acidosis due to ketones—that is, the beta-oxybutyric and aceto-acetic acids depleted the alkali reserve. Were these, however, caused by the starvation alone? Veeder and Johnstone [6] find that the "acetone bodies" produced in children by 48 hours of starvation cause no symptoms and are not dependent on the previous condition of the child. However, no cases with severe convulsions were included in their investigation. Some other acid related to the original morbid condition may have increased the acidosis in this case. All the other patients died. One case (39) was considered to be an example of diarrhœa with intoxication, but he had slight cyanosis and a positive von Pirquet reaction with a normal alkali reserve. Doubtless, this case should not be included in this group, but owing to the first clinical impression it has not been omitted. All those cases which received alkaline therapy maintained a normal alkaline reserve so far as it was observed. Estimations were not made immediately before death. The fatal outcome, however, was not averted. Also, in the two cases (13 and 14, Table II.) which received bicarbonate of soda before the appearance of toxic symptoms, intoxication and death were not avoided. The alkali was always given by mouth in doses sufficient to keep the urine alkaline. More vigorous intravenous administration was never tried.

TABLE II.—*Alkali Reserve of Plasma (Van Slyke) in Infants with Simple Dyspepsia.*

No.	Age in months.	Weight kilo.	Calories per kilo.	Blood sugar grammes per cent.	Carbon dioxide volume per cent.	Hours after feeding.	Remarks.
1	3	2·6	136	0·068	61·4	3	
	4	2·7	149	0·062	67·0	2	
	5	2·8	153	0·071	57·4	3	*D.**
2	5	3·1	151	—	62·4	3	
	6	3·0	104	0·060	64·3	3	*R.*
4	4	3·8	78	0·067	55·3	3	
	5	3·8	126	0·065	48·7	3	*R.*
5	3	2·3	135	0·066	48·6	3	
	4	2·7	184	0·064	47·3	3	
	5	2·9	171	0·090	48·3	1	*R.*
11	4	4·5	92	0·070	54·8	3	*R.*
12	3	2·6	97	0·079	57·6	2	
	3	2·7	97	0·066	56·4	3	
	5	2·8	142	0·075	57·1	3	*D.*†
13	6	3·9	19	0·060	70·0	3	S.B.
	6½	3·9	40	0·062	44·9	3	I.—*D.*
14	5	4·1	31	0·089	69·0	½	S.B.
	6	4·2	60	0·055	58·4	1	
	6	3·9	117	0·083	45·3	2	I.—*D.*
16	5	3·1	34	0·08	56·5	1	*R.*
18	7	3·6	108	0·071	51·6	1	
	8	4·5	118	0·045	52·0	8	*R.*
19	5	3·9	60	0·083	62·8	1	
	5	3·7	118	0·100	61·4	¼	*D.*††
21	7	4·0	63	0·077	66·2	1	
	8	4·3	110	0·060	56·0	8	*R.*
23	6	5·7	69	0·100	54·8	3	*R.*
26	2½	2·9	14	0·050	62·4	2	*D.*††
27	5	4·0	73	0·05	60·4	1	*R.*
29	6	2·7	145	0·09	57·6	1	*R.*
30	4	4·8	112	0·086	58·0	3	*R.*
34	9	5·4	109	0·041	53·8	8	*R.*
37	8	6·8	97	0·100	62·4	4	*R.*
38	3	4·5	95	0·072	55·0	4	*R.*
40	3	2·5	132	0·073	60·4	2	*R.*
45	5	4·2	32	0·066	58·2	1	*R.*
47	9	5·8	114	0·087	61·4	½	*R.*

TABLE III.—*Alkali Reserve of Plasma (Van Slyke) in Infants with Intoxication.*

3	6	3·8	33	0·078	54·8	2	P. and F.
	6	3·9	65	0·069	56·0	3	
	7	4·6	107	0·074	65·8	3	S.B.[1]—*D.*
7	3	2·8	126	0·087	38·0	3	*D.*
9	2	2·5	159	0·059	34·2	3	
	2	2·3	96	0·051	37·2	3	*D.*
10	2	3·7	83	0·072	30·9	2	S.I.
		4·0	112	0·062	58·2	3	*R.*
15	11	2·7	63	0·064	64·2	3	S.B.[2]—*D.*
17	7	6·1	112	0·066	57·4	2	S.B.[2]—*D.*
20	2	3·2	38	0·142	38·1	1	*D*
24	10	5·4	6	0·065	43·0	½	*D.*
25	4	4·6	7	0·100	37·5	½	*D.*
28	4	6·5	0	0·090	33·8	16	H.S.—*D.*
35	5	3·4	33	0·100	42·9	2	*D.*
39	11	4·4	32	0·100	57·6	2	C.P.—*D.*
48	7	5·8	32	—	36·1	—	P.G.-E.
48	7	5·8	—	—	37·6	—	S.B.—*D.*
49	15	7·8	0	0·063	38·5	—	A.D.A.
49	15	7·9	66	0·080	60·3	2	N.D.—*R.*

TABLE IV.—*Alkali Reserve of the Plasma (Van Slyke) in Infants with Various Disorders.*

6	5	3·8	93	0·064	49·7	3	C.
	5	3·9	153	0·090	48·3	1	C.
	6	4·1	119	0·064	49·7	3	*R.*
8	4	2·7	148	0·043	50·7	3	P.V.
	4	2·8	125	0·041	52·4	3	P.V
22	72	15·7	—	0·090	57·6	2	N.R.
31	17	6·0	94	0·072	65·0	3	Cr.
32	9	6·9	84	0·082	53·0	8	S.
36	3	4·2	118	0·050	50·7	4	P.V.
41	3	4·2	60	0·098	54·0	1	P.V.
42	8	4·6	0	0·100	58·0	24	C.
43	9	5·3	62	0·083	65·0	3	T.
50	3	3·6	129	0·1	50·0	2	C.O.B.—*D.*
51	84	14·0	28	—	62·4	3	I.S.B.—*R.*
52	10	5·5	96	0·08	59·5	3	B.-p.—*D.*
53	7	7·0	65	0·08	51·6	3	B.-p.—*R.*
54	16	8·8	66	—	54·5	3	B.-p.—*D.*
55	12	6·9	69	—	45·8	3	B.-p.—*D.*
56	8	6·3	71	0·11	51·6	3	B.-p.—*D.*
58	7	5·4	90	—	42·0	3	B.-p.—*R.*
59	10	—	—	—	42·0	3	B.-p.—*D.*
60	6	7·0	70	—	48·1	—	B.-p.—*D.*

Explanation of "Remarks" Column. (Tables II., III., IV.)

TABLE II.—*D.*, died. *R.*, recovered. I., developed intoxication. S.B., receiving soda bicarbonate gr. x. 4 hourly. P.P., von Pirquet positive. * Died of traumatic peritonitis. † Died three weeks later of gastro-enteritis. †† Died two weeks later of gastro-enteritis.

TABLE III.—P. and F., pyelitis and furunculosis. S.B., soda bicarbonate. S.B.[1], receiving soda bicarbonate 0·656 g. hourly. S.I., symptoms of intoxication. S.B.[2], receiving soda bicarbonate 0·312 g. hourly. S.B.[3], receiving soda bicarbonate 1·3 g. hourly. H.S., 280 c.cm. hypertonic saline intraperitoneally. C.P., cyanosis; von Pirquet; no necropsy. P.G.-E., pyelitis and gastro-enteritis. A.D.A., water only for three days; acetone and diacetic acid in urine. N.D., three days of normal diet.

TABLE IV.—C., colitis. P.V., pylorospasm; vomiting on day of analysis. N., nephritis. Cr., cretin. S., scurvy. T., tetany. C.O.B., congenital obliteration of the bile-ducts. I.S.B., influenza; soda bicarbonate g. 1·3 × 8; acetone and diacetic acid in urine. B.-p., broncho-pneumonia.

4. *Various Conditions.*

Table IV. contains a few analyses of the plasma of infants suffering from various disorders, not accompanied by hyperpnœa. All of them show normal reserves of alkali. Especially noteworthy are the cases of pylorospasm with vomiting on the day of the determinations and low percentages of sugar in the blood. Evidently sufficient sugar was being absorbed and burned to prevent an acidosis due to aceto-acetic acid. The cases of colitis, although severely ill with diarrhœa and fever, were not hyperpnœic and suffered no diminution in the plasma alkali.

Several cases of pneumonia are included here although they were inadequately investigated. In four (Cases 56, 58, 59 and 60) the reserves of alkali were below normal. The others had an apparently adequate supply of available base. Further study of the state of the blood in pneumonia is desirable. If the pulmonary epithelium does not permit the normal free diffusion of oxygen and carbon dioxide, it is possible that free carbonic acid increases in the blood, while oxyhæmoglobin decreases, leaving reduced hæmoglobin in excess. The hyperpnœa with cyanosis may be accounted for in this way. Such reactions as $Na_2HPO_4 + H_2CO_3 \rightleftharpoons NaHPO_4 + NaH_2CO_3$ with the excretion of the acid phosphate by the kidney, or the release of sodium from combination with hæmoglobin, may occur. In any case, if the formation of $NaHCO_3$ cannot keep pace with the accumulation of H_2CO_3 then the hydrogen-ion concentration is actually increased. Obviously this is possible with an amount of available base which is normal at the usual tension of carbon dioxide. In this instance the tension of carbon dioxide in the alveolar air cannot be taken as a measure of its tension in the blood, and the determination of the numerator of the fraction $\frac{H_2CO_3}{NaHCO_3}$ is essential in estimating the true state as regards acidosis. Although there may be a supply of available base adequate to deal with an increased production of stronger acids, the difficulty of excretion of the acids of lower ionisation would create a danger analogous to a depletion of alkali reserve.

The amount of available base appears to be uninfluenced by the height of the temperature.

Conclusions.

In certain of the diarrhœas of infancy, symptoms of intoxication, the chief of which is increased pulmonary ventilation, are accompanied by a reduction in the reserve of bicarbonate in the blood plasma. The hyperpnœa and the alkali reserve vary inversely. The reserve can be increased to normal by the administration of sodium bicarbonate. Hyperpnœa is thus controlled and the general toxic symptoms are alleviated, but the ultimate outcome, in the diarrhœal cases at any rate, is little influenced. It would seem that either the pathological acid possesses toxic properties even when neutralised (as is probably the case with aceto-acetic acid [7 8]) and is not excreted as rapidly as it is formed, or the damage is so extensive before detection of the ensuing symptoms that recovery is improbable. Necropsy throws no light on the questions of the site or extent of the damage done. The usual lesions of gastro-enteritis are the only ones found. Depletion of the alkali reserve is not a cause of the diseased condition, but is caused by it and is essentially, like an elevation of temperature or an acceleration of the heart rate, a variation in a physiological constant, an indication of deranged function. And just as fever and tachycardia demand certain therapeutic measures for their own sake, so acidosis indicates the administration of alkali and fluid and the stimulation of excretion. When the acid produced and the cause of its production are known more specific therapy may be available. In conclusion, no more can be said than that these observations confirm the work of previous investigators.

Thanks are extended to Prof. Noël Paton, University of Glasgow, and to Dr. Leonard Findlay, Royal Hospital for Sick Children, Glasgow, for many valuable suggestions, for the selection of cases and opportunities for clinical observation. The investigation was done under the auspices of the Medical Research Council, by whom the expenses were defrayed.

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Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF PYONEPHROSIS AND URETERAL CALCULUS.

BY A. BERESFORD-JONES, M.B., B.S. DURH.,
SURGEON, KENT AND CANTERBURY HOSPITAL.

THE following case is of interest by reason of the large size of the calculus extracted from the ureter.

Mrs. D., aged 59, obese, gave a history of acute pain in right side of abdomen and right flank, of 11 days' duration. She stated that she had had previous attacks of pain during the past few years, and that her urine had contained blood. The physical signs were: tenderness, rigidity on right side of abdomen and in right flank; a mass was palpated in the right ileo-costal space, also a separate smaller tender mass in the right iliac fossa. The abdomen moved well on respiration. X ray examination showed a shadow over the right iliac fossa.

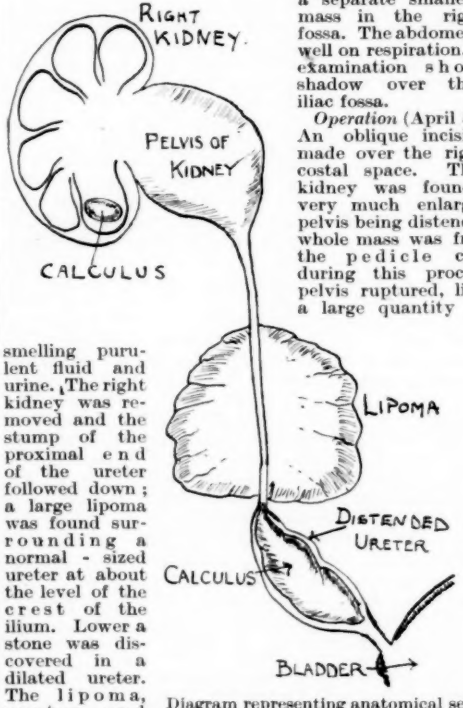

Diagram representing anatomical sequence of structures encountered during operation.

Operation (April 5th, '21). An oblique incision was made over the right ileo-costal space. The right kidney was found to be very much enlarged, the pelvis being distended. The whole mass was freed and the pedicle clamped; during this process the pelvis ruptured, liberating a large quantity of foul-smelling purulent fluid and urine. The right kidney was removed and the stump of the proximal end of the ureter followed down; a large lipoma was found surrounding a normal-sized ureter at about the level of the crest of the ilium. Lower a stone was discovered in a dilated ureter. The lipoma, ureter, and stone were removed, the ureter stump ligated, and the wound drained and closed in layers. The patient made an uninterrupted recovery, and was discharged from hospital on May 13th. On Oct. 19th patient reported, being then quite well. Examination of abdomen revealed nothing abnormal. Scar healed. No bulging or hernia. Urine normal.

Specimen.—Kidney enlarged, cortex thin, calices dilated: small stone at lower pole of kidney; pelvis of kidney enlarged, tapering off into normal-sized ureter surrounded by lipoma the size of a closed fist; immediately below this lipoma a large calculus[1] 8·4 cm. in length, 8·8 cm. at widest circumference, and weighing 48·5 g.

The writer would be glad to hear of any explanation of the presence of the lipoma in the above-mentioned position.

BELLADONNA POISONING FROM EATING RABBIT.

BY DOUGLAS FIRTH, M.D. CAMB., F.R.C.P. LOND.,
JUNIOR PHYSICIAN, KING'S COLLEGE HOSPITAL;
AND
J. R. BENTLEY, M.D. CAMB.

THERE appears to be some uncertainty of opinion as to whether belladonna poisoning can follow eating the flesh of a rabbit which has been feeding on *Atropa belladonna;* the majority of text-books on toxicology make no reference to the possibility. "Blyth" says[2]: "It is the general opinion that rabbits may eat sufficient of the belladonna plant to render the flesh poisonous and yet the animals themselves may show no disturbance in health. But this must not be considered adequately established." Another authority, Glaister,[3] states that "rabbits may be fed exclusively on the leaves [of *Atropa belladonna*] for days without inconvenience, though it produces a dilatation of their pupils as in man," but no reference is made to poisoning in man by this agency. The incident here related seems to prove that the general opinion referred to by Blyth is correct.

A greengrocer, while buying vegetables for his shop, was given a rabbit which had been snared that morning in a district where *Atropa belladonna* is known to grow. Having previously been a fishmonger and poultry-dealer, he prepared the rabbit himself for consumption, noting that it appeared to be in every way in excellent condition. The rabbit was stewed by his wife, and at 1 P.M. these two and their assistant, a girl aged 20, partook of the dish. After the meal, the girl, while washing up the plates, noticed her mouth was dry and procured a drink of water, being shortly joined by the elder woman in the same plight. Soon afterwards they were greatly alarmed by "failing vision," and on calling to the man for assistance, found him in a similar condition. One of us (J. R. B.) was then summoned and saw the patients about 3 P.M.; all presented the typical picture of mild belladonna poisoning—pupils dilated, dry mouth, giddiness, and rapid pulse. After the usual procedure in cases of poisoning, inquiries were made for the source of the poison, but the only thing taken in common was the rabbit for dinner. At 9.30 the same evening we saw the cases together. The man and his wife were better, though the pupils were still widely dilated, and a marked scarlatiniform rash had appeared on the girl. We elicited the information that a dog and a cat in the house had been given some of the rabbit, and an examination of the pupils of both showed them to be dilated and immobile to light. A portion of the rabbit, including the liver, was taken and submitted to analysis. The report on the analysis states that chemical examination of the portion of cooked rabbit showed that a small quantity of alkaloid was present, giving a definite reaction by the Vitali method for belladonna alkaloids.

Remarks.

The rabbit was fresh and, to an expert eye, in good condition. No green vegetables had been cooked with it. Symptoms of belladonna poisoning followed the eating of the flesh in three human beings and two animals, and belladonna alkaloids were found in the flesh. In spite of the enormous number of rabbits consumed yearly, belladonna poisoning through their agency is far from common; this may be due to the universal prejudice against eating rabbits in the spring, summer, and early autumn, the time when the belladonna plant flourishes and affords the rabbit an article of diet.

What amount of atropine was ingested by our patients it is impossible to say. Blyth[4] gives ¼ gr. as the dose which may be expected to give rise to toxic symptoms, and seeing that barely half the rabbit was eaten, the whole body must have contained at least 1 gr. of alkaloids, affording a hearty eater the opportunity of taking a fatal dose.

[1] Other large ureteral calculi have been reported in the following numbers of THE LANCET: 1913, ii., 1456; 1920, i., 150, 767.—ED. L.

[2] Blyth, A. W. and M. W.: Poisons, their Effects and Detection, 1920, p. 394.

[3] Glaister, J.: Medical Jurisprudence and Toxicology, 1915, p. 746.

[4] Blyth: Loc. cit., p. 393.

A NOTE ON THE TUNGSTEN RAYS.

BY W. J. BURROUGHS, M.R.C.S. ENG.

THE tungsten rays as a method of treatment is comparatively recent, and any additional facts as to their utility as a curative factor in medicine may therefore be of interest. The tungsten arc produces, besides light and heat rays, ultra-violet rays; these ultra-violet rays are beyond the limit of the visible spectrum, which ends at $\Delta = 3800$, and it has been found by experiment that when directly applied are strongly bactericidal between $\Delta = 3100$ and $\Delta = 2230$. I have been working for the past six months with an apparatus consisting of two electrodes of pure tungsten actuated by a current of 100 volts and 5 amperes and the results have, on the whole, been most promising.

In all cases of superficial suppuration in which I have tried it, a complete cure has resulted in about 8 to 12 treatments. Among these cases were the following. A poisoned and suppurating index finger of two months' duration, entirely healed with 6 applications; an old varicose ulcer, healed in 8 applications; a case of suppurating cervical glands of six months' standing, with a large swollen inflammatory area extending from the horizontal ramus of the jaw to the clavicle, entirely cleared up with 14 applications; and a case of impetigo contagiosa on face and scalp of a child, aged 2, cleared up in 6 applications. The same curative effects may be noticed in pustular discharges from the ear. Indeed, the tungsten ray has not only proved of great value in suppurative conditions but also in cases of middle-ear deafness generally.

Ear Treatment.—The ear treatment, which is applied by means of a specially made parabolic quartz-fluorite reflector, absorbing a portion of the ray, is of short duration, the earlier treatments lasting only 2½ minutes for each ear, if both are affected. That is to say, 1¼ minutes' application is given through a suitable speculum to the tympanum, and 1 minute's application over the mastoid cells. The beam is made to focus on to the surface under treatment at a distance of 18 in. from the reflector. The patient's eyes must be protected with a shade of some kind and the operator uses special leaded blue glasses. In cases of otosclerosis a treatment as described above may be given every two or three days, the length of the exposure being increased to 2½ minutes for the internal application and 1½ minutes for the external. The improvement in the hearing is, as a rule, noticeable after the fifth treatment, but may appear earlier. In cases complicated by Eustachian catarrh or catarrh of the respiratory passages the fumes given off by the ray, inhaled through a suitable inhaler, are found to have a beneficial effect. A course of about 8 to 12 treatments is given, and the patient is asked to return in a fortnight in case any further treatment is required.

Typical Cases.

In recording the treatments of three typical cases, Tr. = treatment. Ty. mins. = time of application to tympanum in minutes. Mc. mins. = time of application to mastoid cells in minutes. Inh. mins. = time of exposure to inhalation in minutes.

CASE 1.—Mrs. A., aged 55. Chronic otitis media of the right ear of old standing; patient unable to give exact duration. Deafness in affected ear very pronounced. First tr. given on Dec. 1st, 1920, last tr. on April 5th, 1921.

Date.	Tr.	Ty. mins.	Mc. mins.	Inh. mins.
Dec. 1st	1	2	1½	1
,, 7th	2	2½	1½	1½
,, 13th	3	2½	1½	3
,, 17th	4	2½	1½	1½
Jan. 18th	5	2	1½	—
,, 21st	6	2	1	1
Feb. 1st	7	—	—	1
,, 8th	8	2½	1½	—
,, 15th	9	2½	1½	—
,, 22nd	10	2½	1½	2
Mar. 1st	11	2½	1½	2
,, 7th	12	2½	1½	—
,, 11th	13	2½	2 1½	2
,, 18th	14	2½	1½	2
Apr. 5th	15	2½	1½	2

Remarks.—Dec. 13th: Hearing improved; Feb. 1st: Severe cold; 8th: Hearing improved; 22nd: Still improving. April 5th: Great improvement. Discharged.

CASE 2.—Miss B., aged 40. Double otitis media; very deaf in both ears. Tr. began Jan. 18th, ended March, 15th, 1921.

Date.	Tr.	Ear.	Ty. mins.	Mc. mins.
Jan. 18th ..	1	Both	1½	2½
,, 21st ..	2	Left	2½	1½
		Right	1½	1½
,, 25th ..	3	Both	2	1½
,, 28th ..	4	Both	2½	1½
Feb. 1st ..	5	Both	2½	1½

Remarks.—Jan. 28th: Decided improvement. Feb. 1st: Still improving.

A further six treatments of an exactly similar nature were given on Feb. 8th, 15th, 22nd, March 1st, 7th, 15th, when the patient was discharged with normal hearing.

CASE 3.—Mrs. D., aged 35. Chronic otitis media, left ear. Had scarlet fever at 6 years, leaving a discharge from the left ear which eventually disappeared only to return, accompanied by severe pain, each time the patient has a cold. She had an abscess behind the left ear when 21 years of age and had all her teeth out. She is quite deaf on the left side and has a damaged membrana tympani. The tympanum is adherent in parts. Tr. began Jan. 19th, ended Feb. 28th, 1921.

Date.	Tr. (left ear.)	Ty. mins.	Mc. mins.
Jan. 19th	1	1½	1½
,, 25th	2	2½	2
,, 28th	3	2½	1½
Feb. 2nd	4	2½	1½
,, 8th	5	2	1½
,, 28th	6	2	1½

Remarks.—Feb. 28th: Returned for examination; later discharged; otitis cured and hearing excellent.

It is rather surprising to find, on adding up the sum total of the actual time occupied by the treatments, that even in a case extending over so long a period as the first treatment occupies little more than an hour in all, and in such a case as the last just over 20 minutes.

It is quite impossible to lay down hard-and-fast lines as to methods of treatment, length of exposure, &c., which can only be acquired by experience of cases differing widely according to constitutional and disease conditions.

NEWCASTLE-ON-TYNE POST-GRADUATE COURSE.—The course of lectures and demonstrations for the Michaelmas term began on Oct. 13th. The classes which have been arranged are as follows: Clinical Medicine, Dr. W. E. Hume and Dr. A. Parkin; Diseases of the Throat, Nose and Ear, Mr. S. S. Whillis and Mr. W. F. Wilson; Clinical Pathology, Prof. Stuart McDonald and Dr. A. F. Bernard Shaw; X Ray and Electrical Treatment, Dr. W. D. Arnison; Midwifery and Gynæcology, Prof. R. P. Ranken Lyle; Neurology, Dr. Geo. Hall. Thirty-six practitioners have entered for the various classes, which will meet in the Royal Victoria Infirmary every Thursday up to and including Dec. 15th.

Medical Societies.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.

A MEETING of this Association was held on Oct. 21st, with Mr. R. C. ELMSLIE in the chair, when Dr. A. E. SANDERSON CLOW opened a discussion on

GAMES FOR GIRLS.

She said that she would confine her remarks entirely to her own experiences when a girl, and to her observations on the school girls and patients with whom she had come into personal contact. She thought the time long past when there would be any occasion to deal with arguments attempting to prove that field games like cricket and hockey were bad for girls. However, from letters that had appeared in the press during the last few months, it seemed that the matter was still in dispute even among educational authorities. Probably everyone nowadays was agreed that girls must have *some* outdoor recreation, though a girl was often expected to bear the strain of school life and develop her maximum physical strength on a much smaller ration of fresh air and exercise than was deemed necessary for her brother. The varieties of outdoor recreation within the reach of school girls were: walking, cycling, swimming, drilling, and gymnastics; and games—including cricket, tennis, and rounders in the summer; hockey, lacrosse, and net-ball in the winter. As to walking and cycling, the latter was good enough exercise for the legs and thighs, but gave no exercise to the abdominal muscles, nor to the arms and shoulders. Walking was doubtless a very good exercise, but should not be the only one taken throughout the week because the muscles of the back, abdomen, shoulders, arms, and neck were only very partially brought into play. Also it did not afford the same mental diversion or lessons in esprit de corps. Dr. Clow praised swimming as one of the most popular and exhilarating of sports. Drilling and gymnastics, she thought, were excellent in moderation, especially if conducted in the open air, but they did not take the place of games. Drilling was valuable not only as a corrective to stooping and bad habits in standing; it taught concentration and quickness in understanding and obeying orders, and discouraged the desire to show off. Dr. Clow had never seen any ill-effects on girls from gymnastics, and saw no reason why they should not be as beneficial to girls as to boys, while elaborate apparatus was not needed. With regard to outdoor games, the best games for school girls were team games—for example, cricket, hockey, and lacrosse. Criticisms of these games came mostly, she said, from elderly men, or from women who had not had the advantage of playing these games themselves. The important part played by games in the character building of boys had been recognised for generations; girls stood in need of these lessons just as much as did boys, and had the same need of games as an aid to health. Games could be considered in the light of their effect on character, their effect on the mind, and their effect on the physical health during school and adult life. As to the first point there was, in Dr. Clow's opinion, no part of the school curriculum which had more effect on the formation of character than had field games. Besides learning lessons of discipline, endurance, and fair play, the girls learned as children that a certain part of the day should be set apart for outdoor exercise, and, on the other hand, that however engrossing a game might be, the time allotted to it should be subject to definite limits. They learned, moreover, lessons of hygiene and of good citizenship. Dr. Clow, in speaking of matches, remarked that children should not be allowed to play in a match without having the opportunity of micturition immediately beforehand. Many children suffered from rapid urinary excretion under excitement, and the harm that a girl might suffer in playing a vigorous game

with an overdistended bladder was obvious. On many playing fields there was still no lavatory accommodation provided, and this matter should be remedied.

Effects on the Reproductive Organs.

The beneficial effect on the physical health of running and bending and stretching exercise in the open air was generally acknowledged, the only questions in dispute being whether certain games were too strenuous for girls, and whether they had any detrimental effect, either immediate or remote, on the organs of reproduction. Players should be of about the same size and strength, but it was difficult to conceive why girls, who had passed a medical test, and who are equal in strength, playing hockey together for an hour should suffer from the effect of too strenuous exercise any more than boys. It must be remembered that an hour or an hour and a half was usually the maximum time that could be spent on the field. The real test as to the over-strenuousness of the game was the condition of the player afterwards, and at Cheltenham the girls returned from the field day after day fresh, vigorous, and with healthy appetites. Dr. Clow asked for the views of school medical officers as to whether children should be allowed to play vigorous games immediately after their meals. Nature did not seem to prompt them to take any interval for rest, as did animals and adult human beings. From her own recollections of childhood and from observations it seemed to her that digestion proceeded just as easily if no restrictions were imposed. As to the effect of games on the organs of reproduction, Dr. Clow had taken special note on the effect of games on the menstrual function in school girls, and found that a smaller proportion of girls suffered from any menstrual disorder among those who played games than among those who did not, and that this small proportion was still further reduced if the usual exercise was continued throughout the menstrual period. For the last eight years she had advised every girl to continue her warm bath and her games, as usual, during the period, if she felt so inclined and had her mother's consent to do so, and a great many, who had formerly suffered from various degrees of dysmenorrhœa, were now entirely free from it. Those who consulted her for dysmenorrhœa were usually elder girls who were reading for examinations, and in their zeal for study had reduced their time for exercise. On resumption of their former daily exercise their symptoms had disappeared. There was a prevalent idea that girls should forgo exercise during menstruation. It was a very rare thing to come across a child who, of her own accord, would give up her games and walks at these times. The "headache" or any other disabling malady, which girls were taught to fake every month as an excuse for not taking part in their usual games, often became a matter of ridicule to their brothers and uninitiated playmates and of embarrassment to themselves, and Dr. Clow regarded restrictions as unnecessary. Dysmenorrhœa was more prevalent among the leisured than among the working classes, and Dr. Clow considered that compulsory work and exercise were the determining factors in their relative freedom from dysmenorrhœa enjoyed by the latter. As medical officer of a students' hostel, Dr. Clow had kept some records of 136 students trained for teaching in elementary schools. The number was too small to form data from which to generalise, but 69 per cent. had been in the habit of playing games as usual throughout the period. Fifteen per cent. of the total number experienced dysmenorrhœa in various degrees. Again, of 734 girls at the Ladies' College, Cheltenham, when only 35 per cent. were playing games during the menstrual period, 23 per cent. suffered from menstrual disturbance, whereas, later on, when, as the result of advice given, 67 per cent. were continuing their games through the period, only 15 per cent. had any menstrual trouble. These latter figures corresponded closely with those obtained at the training college. As to the remote effect of games and gymnastics on pregnancy, childbirth, and the child, Dr. Clow doubted whether anyone in this country was in the position to quote figures of large enough numbers to enable general deductions to be drawn. But she pointed out that coincident with the growing popularity of athletics among girls there had been a diminution in the number of fatalities connected with childbirth and in the rate of infantile mortality. Moreover, centuries had proved that generations of women who hunted had been the mothers of large and healthy families.

Evidence from a Physical Training College.

Miss M. STANSFELD (Bedford Physical Training College) said that in view of the many vague statements made, with no shred of evidence to bolster them up, she proposed to confine her remarks to direct evidence from her own experience. The bulk of the girls coming to a physical training college at 18 years old were among the best in their school at games; yet it was the very rarest thing to refuse an applicant for physical unfitness, except for such things as enlarged thyroid—and though every student had to undergo a probationary term, only two had been rejected from Bedford for health reasons. This was surely evidence that the girls who had played games most came into college uninjured. On entering college the girl began a life that increased her physical work about ten times. Yet the health of students was exceptionally good. Miss Stansfeld said that she made inquiries last year from a hundred girls then in college on the effect of this athletic life on menstruation. In 64 cases there was no pain; in 26 cases pain was said to be slight, and 20 of these said the pain had been lessened by training; in 10 cases the pain was said to be rather bad, but in 3 cases this only occurred in holidays. There was one effect to which she drew attention, and that was on the frequency of the period. In 7 cases menstruation stopped altogether for the first three months, but later established itself regularly; the flow was usually diminished, and in 47 cases the intervals between the periods were lengthened. A rather remarkable unanimity was shown in answer to a question asking what part of the work was affected most by menstruation. A very few felt no difference, but 97 out of the 100 said any work in the gymnasium requiring balance and coördination was adversely affected, and during the whole period their "eye was out" in playing games; they were less accurate and more easily tired; most of them said they were disinclined for games or dancing or gymnastics. Miss Stansfeld therefore did not allow any games or strenuous physical work during the first three days of the period. On July 26th last, at the end of a strenuous term, the hearts of 16 third-year students were examined and were found to be quite normal. To get some idea of the effect of games, &c., on maternity, Miss Stansfeld had sent round a questionnaire to old students who had children, and received answers from 34. She gave details of the answers. In all but three cases the mother had been able to lead her ordinary life up to the day before the baby was born. The answers to the question on health during pregnancy seemed satisfactory, since with the exception of the three cases mentioned the health was described either as "very good" or "excellent." Sixteen stated definitely that they had "no sickness." The third question, on conditions of labour, elicited the fact that 23 had what they described as a very easy time. Miss Stansfeld gave particulars of other cases, in one or two of which labour was prolonged and in two a very rapid delivery was attributed to overstrong abdominal muscles by the nurse only. Recovery in 24 cases was very rapid, normal habits being resumed in from ten days to a month after the birth. There were two cases of slow recovery. The weight and general health of the babies left nothing to be desired.

Discussion.

Dr. E. H. T. NASH (M.O.H., Wimbledon) said that such unadulterated trash had appeared in the lay press on this subject that the excellent papers by

Dr. Clow and Miss Stansfeld were very welcome. He trusted that in the future no attention would be paid to remarks made without facts to support them. On the question of cycling for small children he suggested that more attention should be paid to fitting the cycle to the size of the child, so that the child should use the calf muscles instead of shifting the weight from side to side. He regarded mixed hockey as unsatisfactory, as women were apt to be overstrained in order to keep up with men. The weapon or ball should always be proportionate to the size of the child.

Miss P. LAURENCE (Roedean School) agreed with all the views expressed by the openers of the discussion except with regard to games during menstruation. At Roedean the girls did not play games during the first three days. Her experience extended over 36 years and 3000 girls had passed through Roedean, of whom many had married and sent their girls back to be educated. The medical officer who had been attached to the school for many years having resigned, Dr. Louisa Martindale, the new medical officer, had sent in a report as a result of her medical examination. She found that those girls who had been four years in the school were in very good physical condition and compared favourably with new girls. This she attributed to physical training in the open air. Miss Laurence praised games for their mental, moral, and pleasurable effect. If games were abolished the tone of the school would be ruined. It was possible to overdo anything, for example to over-eat, but games in moderation did the normal girl nothing but good.

Dr. M. DOBBIE suggested that schools where games were played for much shorter times were in a different category from training colleges as regards continuous exercise during menstruation.

Dr. L. FAIRFIELD said that not only in the lay press but in many gynæcological text-books were to be found remarks derived from intuition rather than fact on this subject. The lack of coördination during menstruation experienced by students was interesting, inasmuch as the superintendent of a resident institution for the blind informed her that the girls' aptitude for learning Braille was markedly affected during menstruation. She had had difficulty in getting any accounts of dysmenorrhœa from large training colleges under her medical supervision. She asked for opinions on sport such as football and boxing for girls. She disapproved of the former because of the strain on the pelvic region and of both because there was risk of injury by direct force, for example, on the breast. She asked for the expression of a medical opinion on this subject because the motives of those encouraging girls to play football were not always unexceptionable. From her experience of girls in the Air Force Dr. Fairfield concluded also that motor-cycling sometimes increased dysmenorrhœa—possibly because of the vibration and the effort of starting—and had tried to secure rest for the girls during the first day of menstruation. As to games after meals, games on an empty stomach were unsatisfactory. Some children were never able to enjoy their sport because it was timed after a long spell of work when they were tired and hungry. She was glad to hear Dr. Clow's remarks on bathing during menstruation; she hoped that the ridiculous superstition against baths during menstruation would be abolished. Dr. Fairfield spoke from experience of 22,000 girls in the Air Force. Clerks and domestic workers were those who suffered most from dysmenorrhœa. Varicose veins was notoriously a disease of the classes who did not play games much.

Mrs. M. SCHARLIEB pointed out that figures might be difficult to collect in England but that nature had provided results of a gigantic experiment in India. The well-born Brahmin girl suffered from want of development of her moral nature and of her abdominal muscles, and suffered proportionately when in labour. On the other hand, among the low caste road-makers, the women did hard work in the open air, and were able to return to work immediately after bearing a child. Miss C. COWDROY (Crouch End High School) voiced her objections to games for girls on the lines of her letter published in THE LANCET of May 14th, 1921.

Miss N. NICHOLLS (Lady Holles School) suggested that the same number of THE LANCET which contained Miss Cowdroy's letter happened to contain an account of Prof. Arthur Robinson's views that a certain amount of pre-natal death is normal and not due to disease of either parent. These figures were based on mares and ferrets and showed at least how cautious we should be in attributing sterility to any definite cause such as games. In the same issue of THE LANCET was a report of a discussion on Sterility at the Royal Society of Medicine, where it was suggested that statistics to be of any value should be based on not less than 1000 marriages, each of which had lasted not less than 15 years, the wife being under 35 and the husband under 40 at the time of marriage. As the Education Act had only existed since 1902 it was evident that many schools had not existed long enough to collect statistics of any value, but that the medical officers of this Association would be in the position to supply valuable information in the future if they kept records. Miss Nicholls expressed anxiety lest criticism directed against games should be thought to be based on ascertained facts, because games cost money for ground and apparatus. If the present wave of economy should take the form of depriving of games those who could not afford them without help, in her opinion economy on games would mean economy on health.

Dr. STANSFELD, in reply to a question whether those who go to physical training colleges were not of exceptionally good physique, pointed out that her argument was not that these girls were typical but that they suggested that an athletic life had at least no detrimental effect. In answer to another question about sculling she said that no bad effects had been noticed from this exercise. Racing was always an exceptionally strenuous form of sport.

The PRESIDENT said that it was bad for anyone to enter into competitive games unless properly trained. It was essential that exercise should be kept within limits and standardised in accordance with the age and strength of the child.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OPHTHALMOLOGY.

EXHIBITION OF CASES AND SPECIMENS.

THE session's meetings of this Section opened on Oct. 14th, with Dr. JAMES TAYLOR, the President, in the chair.

Miss IDA C. MANN showed a series of models illustrating the development of the human eye.

Probable Implantation Cyst.

Mr. L. FLEMING showed a case of probable implantation cyst in a girl who received an injury to the eye 18 months ago. When seen six months after she had a perforating lesion at the limbus with adherent iris, and active iritis was present. Six months later a small nodule appeared in the "nine o'clock" position, but it had not since appreciably increased in size.—Mr. TREACHER COLLINS was doubtful as to its nature, but suggested contact illumination to help in its diagnosis.

Grey Mass in Vitreous.

Mr. J. S. BOOKLESS showed a child with a grey mass in the vitreous, with arborising vessels visible at the back of the lens. A week after being seen a small nodule appeared on the back of the iris. This had progressively increased, and vision was reduced from 6/36 to perception of fingers at a distance of a few inches. The diagnosis seemed to rest between a congenital abnormality and malignant disease.—Sir WILLIAM LISTER regarded it as a cyst of the iris, with a membrane which had formed after the occurrence of hæmorrhage in the vitreous. He did not think it was malignant.—Mr. M. S. MAYOU referred to a case of similar appearance which he had shown, but without the membrane. He agreed that it was a cyst of the iris.

—Mr. TREACHER COLLINS considered that the primary factor was the cyclitis, which had produced a cyclitic membrane. This membrane probably caused an arrest of lymph circulation, which had resulted in the separation of the two layers of pigment at the back of the iris, a cyst being the sequel to that. He advised puncture of the body, which he believed would lead to its collapse.

Dr. WYLIE sent, and Mr. LESLIE PATON demonstrated, a case of Benedict's syndrome. The lesion was supposed to be in the red nucleus, catching the fibres of the third nerve.

The Fourth Cranial Nerve.

Mr. J. HERBERT PARSONS contributed an address on what he termed the riddle of the fourth nerve, the only nerve which had, in the complete sense, a dorsal decussation. It was probable there were no decussating fibres within the central nervous system other than those which passed out in the trunk of the nerve. A peculiarity of the fourth nerve was that it was purely somatic in mammals; it supplied purely somatic muscles and it had no visceral fibres. It was extremely difficult to produce experimental lesions in this neighbourhood sufficiently localised to give definite results. Explanation must therefore be sought in comparative anatomy and embryology. The fourth nerve existed down to the earliest vertebrates, as shown in a slide from a lamprey, in which the eyes were very rudimentary organs. The fourth nerve decussated dorsally, going through the anterior medullary velum in that animal exactly as in the higher vertebrates. Mr. Parsons exhibited slides illustrating the work of Davidson Black, showing the position of the nuclei of the cranial nerves and their points of exit from the central nervous system. The same kind of thing was seen in various specimens of amphibians. Kappers's view was that migration of motor nuclei was due to attraction to foci of incoming afferent impulses (neuro-biotaxis), and the last edition of Sir Arthur Keith's "Embryology" explained the fourth nerve as due to neuro-biotaxis, a view the speaker was sceptical about. Still, there was no doubt of the fact that in the evolutionary process the afferent side became evolved in advance of the motor response. In 1881 Marshall pointed out that in sharks the muscles associated with the third nerve came from the first or pre-mandibular head cavity, the fourth nerve muscles from the second head cavity, and the sixth from the third or hyoid. It was very difficult to obtain evidence of the same thing in the higher mammals. Mr. Parsons pointed out the near association of the fourth and fifth nerves, in the relationship of their branches at a very early stage in their development, and in regard to the ciliary ganglion. Investigation of the transient ganglion of the fourth nerve showed that it did not migrate from the motor part, but developed from the cells of the neural crest. There could be no doubt that this ganglion on the fourth was a posterior root ganglion, and that, at that stage at any rate, the fourth nerve had sensory somatic fibres in addition to motor somatic fibres. Mr. Parsons pointed out that complex synergic movements existed, brought about by nerve nuclei, with fibres which presumably decussated, and which were correlated with each other in a remarkable way in the absence of cerebral hemispheres. Therefore he thought it must be concluded that even at a low stage there was an arrangement for coördinating the synergic movements of the eye muscles. Coördination was usually regarded as entirely cortical, but he thought sufficient stress was not laid on lower coördination centres. This view did not detract from Hughlings Jackson's view, but rather divided that authority's "top storey" into a series of flats.

Mr. ERNEST CLARKE read a paper on

Milestones in Refraction Work

founded upon 40 years of work in the specialty, in which he reviewed the state of ophthalmology in 1881, pointing the great services of Donders in raising the subject of refraction to a scientific level. He said that in eye-strain it was the small errors which counted —i.e., low degrees of astigmatism and anisometropia. Eye-strain might be the "third partner" in any disease; but symptoms attributed to eye-strain might be due to nasal trouble or to dental infection, and extra-ocular conditions should not be lost sight of by the ophthalmologist. If a young person had errors of refraction, the correcting glasses should be always worn, if not at games, always in the house. With regard to myopia the common-sense treatment was to make the patient normal by giving the full correction of the myopia and insisting that the correction should be always worn. With regard to presbyopia, it took years for Donders's teaching to bear fruit. Presbyopes were people who had arrived at a critical stage of life, when there were many worries for them, and in many cases they were the subjects of intestinal toxæmia. Hence every possible channel of waste of nerve energy should be stopped. He proceeded to discuss the subjects of cycloplegics, heterophoria, convergent strabismus, the ophthalmometer, test-types, and trial frames. A short discussion followed.

MEDICO-LEGAL SOCIETY.

A MEETING of this Society was held on Oct. 18th, with Lord Justice ATKIN, the President, in the chair, when Mr. VALENTINE BALL, Barrister-at-Law, read a paper on

INCAPACITY FOR WORK WITHIN THE MEANING OF THE NATIONAL INSURANCE ACT, 1911.

He said: Since the National Health Insurance Act, 1911, it has constantly to be decided whether an insured person is capable of work. This question is decided by a committee of the society of which the insured person is a member. But there has always been a right of appeal. Cases are now heard by a referee and two assessors appointed by the Ministry of Health; the referee is generally a barrister-at-law and one of the assessors a medical man. The National Insurance Act, 1911, confers "periodical payments to the insured," whilst rendered incapable of work by some specific disease or by mental or bodily disablement continuing for a period not exceeding 26 weeks (sickness benefit); also in the case of disease further payments at the termination of sickness benefits (disablement benefit) so long as the subject is rendered incapable by the disease or disablement. Mr. J. H. Watts, in his work on National Insurance, gives it as his opinion that disablement benefit could only be given when the insured was totally incapacitated from doing any work. The decisions of the court—that is, the referee and his two assessors—make it quite plain that the insured person is not entitled to benefit merely because he is rendered incapable of doing the work at which he was employed when the sickness or disablement supervened. Thus, in a case decided in October, 1915, a man who combined the occupation of iron-ore miner with that of lodging-house inspector under an urban district council, and was admittedly unable to carry on the former occupation on account of bronchitis, was held to be not "incapable of work" within the meaning of the Act, since he had been able to carry on the duties of the latter post, partly himself, and partly by deputy. On the other hand, decisions of courts show that "the mischief at which the Act aims being the loss of wage-earning capacity through illness, the question of capacity for (any kind of) work cannot be regarded in the abstract without reference to the particular circumstances of the insured person concerned." It is, however, held to be the duty of an insured person to make an attempt to work if there is medical evidence to show that such attempt will not be prejudicial to his health. In one instance a man suffering from spasm of the œsophagus was suspended from receiving disablement benefit on the ground that, in the opinion of his society, and of its medical advisers, he would be better at work. The patient imagined that he was suffering from cancer. The court, however,

held that the man should have a reasonable period within which to make an effort to do some work. At the end of such period benefit might be suspended if no genuine effort had been made.

"Incapable of Work": Its Meaning.

The question whether the words "incapable of work" should be read as meaning "incapable of remunerative work" has never been expressly decided although it has been raised. In the opinion of Mr. Ball, it was not possible to cite cases decided under the Workmen's Compensation Act as parallels, since the provisions of the Workmen's Compensation Act are expressly designed to compensate for loss of earning capacity. In one case an appellant who had been ruptured in the course of his employment made a successful claim against his employers and was awarded 7*s.* a week on the ground that, while not wholly capacitated, he was only capable of doing light work. His claim upon the funds of his society, however, failed, because the county court judge had, in effect, decided that he was capable of work.

A difficult question arises when an insured person has been rendered incapable, and undergoes a course of training to fit himself for other work. Is he entitled to sickness benefit during the period of training? It would seem from the following case that he is not. A draper's assistant who had lost an eye in the army worked as a milk porter for six months after his discharge, and then had to return to hospital on account of his injury. He was discharged from hospital with a reduced pension. During the next five months he worked for three separate firms of linen-drapers, but was discharged from each owing to the state of his health. In April, 1920, his doctor certified that he was unable to follow his previous occupation; his full pension was restored, and he was sent for training as a bricklayer. His claim for sickness benefit, however, was refused on the ground that he was still capable of doing light work. The court's expression of opinion with regard to "training" was important: "There may be cases in which a man undertaking a course of training is not capable of any form of work, and is accordingly entitled to sickness benefit until his training is partially or wholly completed . . . but where the appellant is capable of light work, however prudent a training may be, . . . the Act does not allow sickness benefit to be paid." If an insured person is compelled to make use of a surgical instrument in order to be capable of work, he becomes eligible for sickness benefit, should he, by accident, be deprived of his instrument. This was decided in a remarkable case in which the appellant had lost both his legs in an accident, but was able to work with artificial limbs. Having broken one of these legs he claimed sickness benefit from his society. The society refused to pay on the ground that the incapacity ceased when it was established that he could work continuously with artificial legs, but the court upheld the man's claim.

Duties and Powers of the Insurance Doctor.

Referring to the duties and powers of the insurance doctor Mr. Ball said that the proper working of the Act depended very much on the judicious signing of certificates. The doctor's certificate was not final, but was most important. The certificate should be reasonably explicit, and, if necessary, the doctor should insert qualifying words on the printed form before signing it. Mr. Ball said he believed it was on record that a doctor had given a certificate to the effect that a man was "still incapable of work." It was true enough, but he might have amplified it a little. He might have said, "still is, and in all probability will remain, incapable of work." The man was dead. When a case is referred to a medical referee, it is advisable that the insurance doctor who has signed a certificate should see his patient again if he is going to appear as a witness to contradict the referee. In a recent case, a woman had received sickness and disablement benefit continuously from January, 1918, to February, 1920, upon the certificates of her panel doctor that she was suffering from bronchitis. After examination by the referee, whose opinion that she was fit for work, was confirmed by an umpire, payment was stopped. Her panel doctor, who appeared as a witness on her behalf, admitted not having examined her about the time of the medical referee's examination. In these circumstances the court disallowed her claim. It was advisable that the panel doctor and referee should collaborate, and, if possible, the former should be present at the time of the latter's examination and lay all relevant facts before him.

Discussion and Reply.

Dr. HENSLOWE WELLINGTON said he had acted as medical referee to an Approved Society since 1914, and had inquired into nearly 7000 cases in four years. His experience convinced him that there was very little true malingering, but there was a tendency on the part of some of the insured persons to prolong their convalescence unduly.

Dr. M. I. FINUCANE believed that insurance medical officers had been somewhat careless in signing certificates and had thus lost the confidence of the Approved Societies, who otherwise might now have been more ready to support the panel doctor in his effort to retain the present capitation fee.

Surg.-Captain M. H. KNAPP, R.N., asked whether a man "in quarantine" on account of an infectious fever was entitled to sickness benefit.

Dr. J. HALLIDAY SUTHERLAND agreed that there had been very little malingering before and during the war when wages were high, but considered that it was now increasing. There should be heavy penalties for incorrect certification of unfitness.

The PRESIDENT said that there had been some condemnation of the panel doctor, but very little appreciation of much of his good work. He thought it was quite natural for the doctor to give his patient the benefit of any doubt that might exist when signing certificates. He was surprised there were so few appeals against decisions of Approved Societies, since the cost to the applicant of an appeal was only a guinea. In his opinion "incapacity for work" meant "incapacity to earn wages," and the interpretation of the Workmen's Compensation Act would be useful as a standard in settling questions under the National Health Insurance Act.

Mr. VALENTINE BALL, in reply, said that his paper had emphasised the importance of correct certification, as certificates affected also unemployment pay, which could only be drawn by a man who was "capable of work." In reply to Surg.-Captain Knapp he said that the onus of deciding whether a man "in quaratine" was capable of work would fall on the doctor. His paper had borne fruit already in the expression of opinion on the interpretation of the Act it had won from the learned President.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

AT the first meeting of the session of this society, held at 11, Chandos-street, London, W., on Oct. 20th, Sir JAMES CANTLIE, the President, occupied the chair and delivered an inaugural address on

Life Insurance in the Tropics.

He drew attention to the frequency with which insurance premiums were allowed to lapse by young men in the early stages of their careers in the tropics, owing to financial stress and the extra premium usually charged to cover the supposed additional risk of living in a tropical climate. He estimated that in two out of every three cases the payment of premiums was dropped, necessarily to the great advantage of the insurance companies, which might therefore be encouraged to maintain the extra charge. The first five years of a young man's life in the tropics afforded the most critical period, and in some measure justified the higher premium,

but only during that time; for the gradual acclimatisation of the insured subsequently warranted a reduction of the insurance rate. The most common causes of ill-health in the tropics were malaria and dysentery, which frequently invalided but comparatively seldom killed. Consequently the extra premium for insurance against death, he held, was not justifiable. He maintained that the statistical returns of companies issuing life insurance policies in the tropics were based on inexact reports, which gave an unfounded character of deadliness and additional risks to certain climates. Such returns were of little real value unless dependent on the reliable data of the resident medical men, who should be appointed to act as registrars. He asked pointedly whether the candid experience of the medical officers of the societies concerned bore out the statistics drawn up by the actuaries. Actuarial details of the insurance companies gave no information as to disease in the tropics, and the true particulars could only be obtained from medical men in the various countries affected. The injustices imposed by the high insurance rates were in part due to evils of red tape, hide-bound rule of thumb methods, and mechanical organisation which prevented a readjustment of the companies' rules to meet the present-day experience of the improved conditions of life in the tropics, and in part to the barrier offered by the combine of the insurance companies which opposed any reduction of premium. He instanced as an example of the paradoxical lack of equity in the insurance rates the case of an Anglo-Indian whose ill-health in England was only remedied, and his life prolonged, by a return to India. Yet, so long as he stayed in England, where it was risking life to remain, he paid a lower premium than he did in India, where conditions were more favourable to a maintenance of health. He had come to the conclusion that a just and fair remedy would be to reduce the extra premium, after a period of acclimatisation in the tropics of four or five years, on provision of a clear medical certificate; or, avoiding the extra premium altogether, the value of the policy might be reduced in the first years from, say, £1000 to £750, and subsequently raised to the full sum insured. He also referred to the readiness with which American companies were eager to insure life in the tropics at a lower rate than British companies.

Discussion.

Sir WILLIAM LEISHMAN felt sure that statistics were available to show that the risk attaching to young men going out to the tropics was greatly exaggerated, and that their publication should serve to relax the stringency of the additional insurance rate.

Sir LEONARD ROGERS drew attention to facts, which insurance companies seemed disposed to ignore—namely, that as the result of modern advances in tropical medicine conditions of living in the tropics had been much improved (e.g., antityphoid inoculation), the danger of typhoid fever had very largely disappeared, and by present methods of treatment death-rates from cholera, liver abscess, and dysentery had been greatly reduced and the risks to life and health much diminished. It was only right that such facts should be brought home to the insurance companies with a view to lowering the extra premiums charged for the tropics. He could confirm the President's reference to the activities of American agencies and their readiness to circularise their branches with information based on statistics of disease in the tropics.

Several subsequent speakers quoted their experiences of tropical insurance rates. In some instances no additional premium had been imposed by residence in the tropics, the policies being world-wide; others, less fortunate, however, had been obliged to pay a higher rate. In one case this amounted to an addition of 4 guineas per cent. of the total insured, and that only for transference from Northern Rhodesia to Tanganyika territory.

The PRESIDENT, in the course of his reply, sought explanation as to how far the frequency of leave demanded by the West African Service was due to the influence of climate or actual disease contracted on the West Coast, and referred to the prohibitive rates charged by shipping companies for the passage home of invalids as an evil which needed remedy. He suggested the advisability of the Society appointing a committee to inquire into the whole question of tropical life insurance. It was, he maintained, a matter in which the Society might well act in an advisory capacity and as referees.

On his proposal being put to the vote, the opinion of the meeting proved to be evenly divided.

Demonstration and Short Papers.

A demonstration was given by Dr. J. G. THOMSON of the transmission of *Trypanosoma cruzi* by the bug *Rhodnius prolixus*. Living specimens of the male and female reduvid bug, *Rhodnius prolixus*, were shown which had been hatched out five months previously from ova sent from Venezuela by Dr. Henri Tjera. The bug, measuring about ½ inch in length, was common in South America, and infested the burrows of the armadillo, but readily bit other animals and human beings. The armadillo was regarded as a possible host of *T. cruzi*, transmission being effected through the agency of the parasitic bug. The specimens shown of *Rhodnius prolixus* had been fed on a young rat infected with *T. cruzi*, and the fluid dejecta of the bugs contained the living trypanosomes. The demonstration included microscopical specimens of (1) the recent secretion of the bugs exhibiting actively moving forms of *T. cruzi*; (2) stained films of the bug's secretion containing the trypanosomes; (3) stained section of the heart muscle of a rat infected with *T. cruzi* by intraperitoneal injection of the secretion of *Rhodnius prolixus*, showing trypanosomes in the muscle-fibres, where they had apparently curled up and assumed leishmania-like forms; (4) stained films from the blood and heart muscle of the infected rat showing *T. cruzi* in both the crithidial and fully developed stages; (5) flask-shaped ova of *Rhodnius prolixus* with their flap-like lids.

Dr. C. M. WENYON, hon. sec., communicated an abstract of the following short papers which had been presented for publication in the Society's Transactions: (*a*) Note on Relation between Tsetse-Fly (*G. morsitans*) and Game in the Proclaimed Area Nyasaland. (*b*) History of the Introduction and Spread of Human Trypanosomiasis (Sleeping Sickness) in British Nyasaland in 1908 and following Years, by Dr. W. A. Murray (late Captain S.A.M.C. and Officer-in-Charge of Sleeping Sickness Investigation in Zululand). Sleeping sickness, usually transmitted by *G. palpalis*, had been introduced into Nyasaland in 1908 in the form of *T. gambiense*, and its excessive virulence there was ascribed to transmission by the tsetse-fly, *T. morsitans*. (*c*) A note on the Treatment of Suppression in Blackwater Fever, by Dr. A. F. Wallace (Medical Officer, Northern Rhodesia Administration), drew attention to the relief afforded by high rectal irrigation with hot saline injections. (*d*) A preliminary note on the Development of *Loa loa* (Guyot) in *Chrysops silacea* (Austen), by Dr. and Mrs. A. Connal, of the Medical Research Institute at Lagos. Since their previous communication[1] to the Society these workers had confirmed the important results of their earlier research on *Chrysops silacea* as the host of *Loa loa* by a number of experimental investigations of the feeding of infected chrysops on guinea-pigs. The reluctance of the infected fly to feed, which had been observed, was attributed to the obstruction caused by the presence of the filarial embryos in the fly's proboscis. It was noted that the fly endeavoured to free itself by milking the blocked proboscis with its forelegs; in the course of this process small masses of embryos were flicked off and could readily be seen by means of the microscope on the skin of the subject fed upon.

[1] LANCET, 1921, i., 540; Trans. Roy. Soc. Trop. Med. & Hy., Feb.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

THE opening meeting of this Society was held at 1, Upper Montague-street, London, on Oct. 21st, when Dr. W. J. HOWARTH, M.O.H. for the City of London, the newly elected President, delivered an address on

Certain Public Health Problems.

After tracing the evolution of preventive medicine from primitive measures of self defence against gross conditions which offended the special senses, through the days of precautions based on experience without scientific foundation, to modern changes consequent upon the development of industrialism, Dr. Howarth pointed out that treatment in adult life meant treatment of conditions which the application of prevention in curative medicine at earlier ages would, in many cases, have rendered unnecessary. The position resolved itself into one in which the two groups of practitioners were not working along parallel lines. The preventive practitioner—that is, the medical officer of health—devoted his chief energies, so far as regards the individual member of the community, to conditions which were discovered mainly below the age of 14 years. The curative practitioner exercised his skill on persons over the age of 16, and under circumstances which did not fill him with enthusiasm for preventive work. A dual organisation therefore appeared to be necessary, curative work, whether in connexion with tuberculosis or venereal disease or such as would be performed by the special departments outlined by the Dawson report, being carried out by a distinct clinical organisation, early preventive work also being arranged for. To carry this proposal into effect the provisions of the National Insurance Act would require to be either extended or altered. Extension would mean the inclusion of dependents, but money was too scarce to expect any such plan to receive favourable consideration. The alternative appeared to him, as a medical officer of health, to require the cancellation of existing arrangements, leaving working persons above the age of 16 to make their own arrangements with doctors, and, if possible, for the State to use the money thus saved to ensure the continuous supervision by practitioners of families in which are children at growing ages.

Dr. F. E. FREMANTLE, M.P., in inducting the new President, spoke of Dr. Howarth's work extending over 24 years as M.O.H. of Derby, Kent, and the City of London in turn. He had been President successively of the Midland, Home Counties, and Metropolitan branches of the Society.

Prof. H. R. KENWOOD proposed a vote of thanks to Dr. Fremantle, the outgoing President. He felt that in the future they would always have his valuable help as a Member of Parliament.—In his reply, Dr. FREMANTLE said that his year of office had been a critical one, because of the national after-war problems that had arisen, and of the reconstruction of the Society that had been proceeding.

Twenty new members and seven associates were elected at the meeting. A number of candidates were also nominated, arising out of the recent absorption of the Society of Medical Officers of Infant Welfare Centres as the maternity and child welfare Group of the Society of Medical Officers of Health.

MEDICAL WOMEN'S FEDERATION.

THE first meeting of the London association was held on Oct. 18th at the Elizabeth Garrett Anderson Hospital. Dr. LOUISA MARTINDALE was unanimously elected to the presidency on the retirement of Mrs. Flemming, M.D., and she proceeded to read her opening address on the subject of

Birth-Control.

She pointed out that the movement began in England in 1877 when the Bradlaugh-Besant trial took place. In Germany the movement started later, but once started the birth-rate fell as much in 12 years as it had done in 70 years in France. The fall in birth-rate is, however, accompanied by a corresponding fall in infant death-rate, so that up till now the natural increase in the population had been little affected. Statistics showed further that both birth and infant mortality rates are lower in the more thoughtful and educated classes, and that it is among these classes that methods of birth-control are chiefly used. These methods might be classified as follows:—

1. *Natural.*—Either celibacy or voluntary abstinence, which may be total or during the most fertile part of the woman's monthly cycle.
2. *Methods used by the husband.*—(*a*) Withdrawal or coitus interruptus; (*b*) use of sheath or French letter; (*c*) a dose of X rays.
3. *Methods used by wife.*—(*a*) Quinine pessaries; (*b*) douching; (*c*) introduction of rubber cap.

Of these methods it was agreed that coitus interruptus is bad for the nervous system of both parties. The French letter was the most efficacious—douching and the Dutch cap were not entirely satisfactory.

Dr. Martindale then discussed the views of English Roman Catholic and Jewish churches on the ethics of the matter, and finally summed up the reasons for and against birth-control. Relative poverty, illness during pregnancy or confinement, the possibility of enforced separation should a baby arrive (as amongst Anglo-Indians), disease, such as tuberculosis, inherited insanity, &c., were among the chief reasons given in favour of the practice, whilst risk of encouraging sexual excess and the possibility of eventual sterility were the main reasons against it. The whole aim of the movement was undoubtedly to better the conditions of women's lives. Dr. Martindale thought that there were worthier ways of attaining this end—as, for instance, improved housing, an efficient scheme of employment, as well as educative methods which would help to decrease rather than increase sex excitation.

An animated discussion followed the reading of the paper, and it was decided to consider further aspects of the question in more detail at subsequent meetings of the association.

HEALTH WEEK.

FROM Oct. 9th to 15th Health Week was observed throughout the country, local arrangements including conferences, lectures, health exhibitions, visits to health centres, and many other activities calculated to rouse public interest in the health of the country. From among the popular lectures given during the week one or two examples may be cited. At Brighton Dr. H. Gervis, J.P., delivered an amusing address on "Bad Health and Good Intentions," in which he discussed the case of an imaginary recruit suffering from numerous ailments and disabilities which might have been prevented by better care in childhood. Thus corns, flat-foot, and ingrowing toe-nails resulted from tight footwear; indigestion from (1) a dose of castor oil administered almost immediately after birth with a subsequent vicious circle of diarrhœa and constipation, and (2) eating too much; rupture from too tight application of a "binder" at the same tender age; lung trouble from too much heavy clothing and from a diet containing too little fat; insufficient fresh air and exercise, from a devotion to the kinema and to watching other people play football; and various defects of teeth, throat, eyes, and ears, all derived from causes which might once have been averted. Dr. Gervis remarked, with reference to the neurasthenic condition resulting from these disorders, that he often thought "it would be a great kindness to certain unborn children if people of a highly neurotic nature abstained from procreating their race." At Wakefield, Dr. J. B. McDougall, chief tuberculosis officer of the West Riding County Council, pointed out in a lecture on "Simple Truths Concerning Tuberculosis" that the most difficult problem of propaganda was to make people unlearn false teaching, and instanced the belief, still widely held among the public, that tuberculosis was hereditary. At Poole Dr. R. J. M. Horne, medical officer of health, gave short dinner-hour talks to working-men with great success, pointing out to his audiences that health talks had been given in the schools, and that as the children would doubtless come home and ask questions, it behoved the adults to be able to answer them. Dr. C. W. Saleeby, lecturing at Earl Shilton, Leicestershire, took for his subject "The Light of Day," and discussed the smoke problem of cities and the necessity for a more open-air life for the combating of tuberculosis.

Reviews and Notices of Books.

PARASITOLOGY.

The Intestinal Protozoa of Man. By CLIFFORD DOBELL, M.A., F.R.S., Protistologist to the Medical Research Council, National Institute for Medical Research, London, and F. W. O'CONNOR, M.R.C.S., L.R.C.P., D.T.M. & H., Wandsworth Scholar, London School of Tropical Medicine. London: John Bale, Sons and Danielsson, Ltd. 1921. Pp. 211. 15s.

IN an earlier publication Mr. Dobell dealt in detail with the human intestinal amœbæ. Now, in collaboration with Dr. O'Connor, he considers the whole subject of the intestinal protozoology of man, treating it in that same lucid, critical, and practical manner which characterised the earlier work. As a practical guide to the diagnosis of the various protozoa which inhabit the intestinal canal of man this book will undoubtedly fill an important place.

During the war a vast literature dealing with this special branch of human parasitology has accumulated. Any attempt to deal with these records is rendered the more intricate on account of the fact that many investigators who have published their views were approaching the protozoa without the previous knowledge and experience essential to accurate records and deductions. The whole of this war literature, as well as that of the pre-war period, has been carefully considered by the authors. That which can be reliably accepted has been sifted from the mass of ambiguous and erroneous statements, and has been presented to the reader as a most interesting narrative. The student may accept the volume with the assurance that he will not be misled and that he will find in it everything that is actually known about these protozoa—their mode of life and reproduction, the methods of their dissemination, their distinctive characters, their pathogenicity, and the drugs which affect them adversely, and which in consequence are used in the treatment of the diseases they produce.

After an introductory chapter dealing with the protozoa in general, their position in the animal kingdom, and their classification into various types, the authors pass on to consider the five species of the intestinal amœbæ of man, of which *Entamœba histolytica* alone is pathogenic. The important question of the carrier of this amœbæ, first brought to light through the investigations of E. L. Walker in the Philippines, is discussed in some detail. Chapter IV. is devoted to the intestinal flagellates of man, of which the authors admit five authentic species. In their opinion there is as yet no good evidence to prove that any intestinal flagellate found in man is pathogenic; on the contrary, the evidence suggests that most and probably all of them are harmless. In this opinion they differ from many clinicians who believe that in certain cases the flagellates are definitely harmful, though the absolute proof of this is difficult to obtain. The various coccidia occurring in man are next considered, the life-history of a typical coccidium is explained, and its method of destroying the intestinal epithelium is illustrated by a diagram. Human coccidiosis, as far as is known, is a transient condition, so that the extensive destruction of epithelium which occurs in heavy infection in animals is not seen in man. Of the three ciliates of the human intestine *Balantidium coli* appears to be the only one of practical importance, since it gives rise to balantidial dysentery much in the same way as *E. histolytica* produces amœbic dysentery. Carriers of *Balantidium coli* also exist, and the relationship of the human infection to that which occurs in pigs and monkeys is discussed by the authors.

In Chapter VII. are described the methods employed for diagnosis of the intestinal protozoa and the many pitfalls which beset the path of the unwary. If the instructions given in this practical section are carefully followed errors of diagnosis will be reduced to a minimum. The authors point out that no protozoologist will ever venture to diagnose an infection without actually seeing the particular organism. In this connexion various "clinical makeshifts," such as the character of the stool, its cellular constituents, and Charcot-Leyden crystals, are discussed. According to the authors, none of these lead to anything more than "plausible guesses" as to the nature of the condition present. They perhaps do not sufficiently recognise the fact that in certain cases the treatment of a patient has to be begun before an accurate diagnosis by the discovery of the parasite can be made. Furthermore, there is always the danger that the discovery of such a parasite may actually lead to an erroneous conclusion as to the cause of the illness. No one would withhold emetine in a case of hepatitis because amœbæ could not be discovered in the stool, and it would be quite unnecessary to administer emetine to a case of acute bacillary dysentery or malaria even if *E. histolytica* were present in the intestine. It is perhaps unfortunate, though unavoidable, that clinical diagnosis is in such cases a guess. The protozoologist may be able to assert that such and such an organism is present, but whether the symptoms of any particular case are actually due to the organism or not can often be decided only by the success or failure of special lines of treatment.

In Chapter VIII. the various treatments which have been recommended for intestinal protozoal infections are reviewed. Of the numerous medicaments which have been employed emetine and ipecacuanha hold first place and it would appear that these alone have any specific action. Curiously enough, emetine gets rid of infections of *E. histolytica* and *Iodamœba bütschlii*, two amœbæ of very different habits, though the other intestinal protozoa are not affected. In the last chapter a number of coprozoic protozoa are dealt with. These are free-living forms which produce resistant cysts. The latter are frequently ingested with food and pass unharmed through the intestinal canal. Soon after the stool has been passed these protozoa emerge from their cysts and commence multiplying, so that erroneous impressions as to their being parasites of the intestine are readily obtained.

The book is well illustrated with a series of eight plates and text figures. One plate deserves special mention, since it is bound to be of particular value in diagnosis. In this plate the appearance of a hypothetical cyst of each protozoon is shown under three conditions—in simple saline solution, in iodine solution, and stained by the iron-hæmatoxylin method.

The book should be read by every student of this highly specialised subject. It is the only up-to-date account of the human intestinal protozoa which exists, and the authors are to be congratulated on having presented to the scientific world such an excellent treatise.

Elementary Parasitology. (First Year.) By THOMAS T. O'FARRELL, F.R.C.S.Irel., D.P.H., President, Section of Pathology, R.A.M.I.; Pathologist, St. Vincent's Hospital, &c. Dublin: Fannin and Co. 1921. Pp. 32. 1s.

THIS little book has been written expressly for nurses, with a view to giving them some idea of the numerous parasitic diseases with which they come in contact in their professional duties. There are two sections, the first dealing with Animal and the second with Vegetable Parasites. The various ecto-parasites, such as the flea, louse, and itch-mite, are briefly described and the part they play in the carriage of disease is simply explained. The louse as a carrier of typhus fever is mentioned, but its transmission of relapsing fever is omitted.

Endo-parasites like the tape-worms, flukes, and round-worms are next considered. Though the method by which people become infected with tape-worms is described, there is no mention of the fact that Ascaris and Oxyuris gain entrance to the body by the eggs

found in the stool, nor that Bilharzia enters the human body in the form of a cercaria which penetrates the skin while people bathe or wade in water. The parasite of malaria and its carriage by the mosquito are dealt with in a sufficiently explicit manner, but the omission of any mention of the mosquito-net, the most important of all prophylactic measures with which a nurse has to do, is to be regretted. The section devoted to the consideration of vegetable parasites is clearly presented. It might be improved if greater emphasis were laid on the methods of infection. It is of the utmost importance that nurses should understand the dangers of infection in dysentery and typhoid, and clearly grasp the fact that the stools of such cases are swarming with bacteria, which may easily be transferred on the hands, utensils, or food to other individuals.

The book, which has two attractive plates, is undoubtedly useful and should help those for whom it was written better to understand many of the routine methods adopted for the handling of infectious patients.

NEUROLOGY.

The Form and Functions of the Central Nervous System. An Introduction to the Study of Nervous Disease. By FREDERICK TILNEY, M.D., Ph.D., Professor of Neurology, Columbia University; and HENRY ALSOP RILEY, A.M., M.D., Associate in Neurology, Columbia University; with a Foreword by GEORGE S. HUNTINGTON, Sc.D., M.D., Professor of Anatomy, Columbia University. London: H. K. Lewis and Co. 1921. With 591 figures containing 763 illustrations, of which 56 are coloured. Pp. 1020. £3 10*s.*

THE two American neurologists responsible for the production of this handsome volume have undoubtedly deserved well of the profession both as regards their detection of a lacuna in neurological literature and their effort to fill it. There always comes a time in the development of neurological knowledge on the part of the student or physician who is taking his subject seriously when he finds that he must know more nervous anatomy and more neuro-physiology. No amount of easy clinical acquisition derived from the observation of a large number of more or less similar cases—as occurred on a huge scale in the war in reference, e.g., to "shell-shock"—can in any degree compensate for anatomo-physiological ignorance of the nervous system. No study of mental disease, howsoever abundant the clinical opportunities, can be anything but incomplete if it is not erected on the fundamental basis of acquaintance with normal neural function. If the same mechanisms, physiological or psychological, are in activity in disease as in health, he neglects an essential factor in his comprehension of the former state who fails to make himself conversant with the processes of the latter. For the neurologist the detailed and comprehensive treatise of Dr. Tilney and Dr. Riley is practically a sine qua non. Within its boards he will find collected, organised, and clearly set out a body of doctrine, anatomical and physiological, which is, in the simple meaning of the word, indispensable; and its application to clinical medicine is throughout borne in mind, so that data otherwise relatively uninteresting or unimportant if detached from this application become meaningful and are seen to fit into the neurological scheme.

Merely to indicate the contents of a volume which runs to a thousand pages would occupy too much space in a brief review. The book consists in reality of several treatises, on nervous embryology, anatomy, physiology, pathology, and on clinical neurology. It is nothing if not ambitious. Take a single example—the cerebellum; in successive chapters its evolutional significance, its relations, surface appearance and anatomy, its internal structure, histology and embryology, its functional significance, its principal syndrome and its variations, are handled with ability and are admirably illustrated. This all-embracing plan of description is adopted throughout for all the components of the nervous system. There are various imperfections, only one or two of which can here be indicated. Thus the question of tonus and its modifications is dealt with in a scattered and incomplete fashion, and, as far as we have noted, there is no correlation of the disorders of tonus arising from lesions in various widely differing parts of the neuraxis. There appears to be no systematic description of the tendon reflexes, and ankle clonus is not to be found in the index; Babinski's plantar reflex is included under abnormal associated movements and is mentioned elsewhere in passing, but is not apparently described. Nystagmus is baldly stated to be the result of disturbance in the synergic units controlling the eye movements, but its importance as an organic symptom would have justified discussion at much greater length. The work is stronger on the anatomo-physiological than on the clinical side, but it does not pretend to be a complete text-book of semiology. A useful glossary, a bibliography, and an index running to more than 40 pages add to the value of a treatise which is a credit to American neurology, and which will at once take its place as a volume of reference.

SYPHILIS.

A Treatise of Ætiology, Pathology, Diagnosis, Prognosis, and Treatment. Section I. By Dr. H. H. HAZEN, A.B., M.B., Professor of Dermatology and Syphilis, Georgetown University, Washington, D.C. London: H. Kimpton. Pp. 647. 42*s.*

IN his introduction to this work Dr. Hazen states that "there exists no small book that covers the whole field of syphilis in an authoritative way." The statement is true. There are many voluminous tomes and there are many smaller works devoted to this subject. There are also sections in many books which, dealing with venereal disease as a whole, necessarily include syphilis. The voluminous tomes are too bulky, and the smaller works, useful as they may be to the elementary student, are not sufficiently wide on the one hand or definite upon the other to satisfy the requirements of the practitioner or advanced student. This volume is useful in that it not only gives a general sense of perspective but also deals with the subject of syphilis in respect to its more specific manifestations, affecting the special senses and the endocrine glands. After reading this book a general practitioner will not necessarily be in a position to undertake entire charge of patients suffering from every syphilitic manifestation, but at least his clinical horizon will be so developed as to enable him to know when expert aid should be invoked. The author protests against empirical and routine reliance upon the bacteriological and serological measures, which are only to be regarded as being adjuvants to clinical observation.

Dr. Hazen is unduly optimistic in his presumption that his readers possess an adequate knowledge of dermatology. Unfortunately, a large number of those responsible for the treatment of syphilis do not possess that knowledge of skin diseases which should be a preliminary to a practice involving the care of syphilitic cases. We should also be glad to see in a future edition a warning that the Wassermann reaction should only be carried out by those in constant practice. Chapter XV., by Dr. H. A. Fowler, on Syphilis of the Genito-Urinary Organs, is especially useful, though but little information is given in respect of the diagnosis of syphilitic lesions of the cervix. In the chapter devoted to syphilis of the nervous system by Dr. J. E. Lind, the section on neuroses is particularly enlightening. We regret that, possibly owing to considerations of space, more discussion of the problems of the prevention of syphilis by either medical or sociological means has not been included.

While congratulating Dr. Hazen and his colleagues upon their achievement, we may hope that on the appearance of a second edition we shall also be able to congratulate the publishers upon providing a binding of stability more worthy of the valuable material which it includes.

V.R. 76: A FRENCH MILITARY HOSPITAL.

By HAROLD J. RECKITT. London: William Heinemann. 1921. Pp. 292. 21s.

BOOKS dealing with war hospitals are always interesting although they naturally have a strong resemblance one to another. But the record now before us is remarkable in that it describes a military hospital practically founded and financed by one who, though himself a Quaker, had no scruples in doing what he could to help the fighters for freedom and justice. Mr. Reckitt tells us in his earlier chapters how he and his wife determined to do something more than give money; they were in the happy position of being able to do this, but as he says "giving without working seemed to my wife and myself an empty thing—we had to find out what we could do ourselves." So they determined to start a hospital in which they themselves could work, helped by inhabitants of their own village who were too old for army service. There were many difficulties in the way of realising this idea, and finally Mr. Reckitt went into partnership with Lady Johnstone, wife of Sir Alan Johnstone, British Minister at The Hague, who was also trying to found a hospital. Eventually a start was made in a disused Marist College at Ris Orange, about 20 miles from Paris on the Fontainebleau Road. The staff was mainly British and American, though there were also members of other nationalities, including French, Italian, Russian, Dutch, Norwegian, Luxemburg, Filipino. The hospital got under way about July, 1915, and continued its beneficent work until 1918, in September of which year it was moved to Juilly. This date concludes the first part of the book written by Mr. Reckitt; Part II. consists of chapters contributed by various members of the staff, written from their particular point of view.

The motto of Verdun, "They shall not pass," was the spirit which inflamed the Allies with that force which enabled them to win through, and although the Johnstone-Reckitt Hospital was but one, and that a comparatively small one out of many, its record shows a spirit of which its founders may well be proud.

PRACTICAL CHEMICAL ANALYSIS OF BLOOD.

By VICTOR CARYL MYERS, M.A., Ph.D., Professor of Pathological Chemistry, New York Post-Graduate Medical School and Hospital. London: Henry Kimpton. 1921. Pp. 121. 16s.

NOT only does blood analysis yield information of value in such conditions as diabetes mellitus, nephritis, and gout, but its sphere of usefulness is being extended daily to a variety of diseased conditions. That this is so is due primarily to the labours of American workers using the methods which they have themselves devised. The result of all this work has tended to show that the chemical analysis of the blood yields results of far greater value to the clinician than can be obtained from repeated urinary analyses. The American journals of recent years have been occupied by papers dealing with methods of estimation of various blood constituents, modifications of the methods, criticisms of reagents employed, and also with detailed accounts of the results obtained. It appears abundantly evident that methods in the hands of those who have devised them prove successful, but it does not follow that equally successful results are obtained by other workers using the same method. Much depends upon confidence in the reagents and apparatus employed. A useful feature of Prof. Myers's book is that a list of standard solutions and reagents is provided at the end. Careful directions are given for the preparation of the reagents employed in the text, and the frequent use of the words "pure" and "of the highest purity" is to be commended. In dealing with small quantities of blood it is necessary to use good reagents, and to obtain results with the minimum of error it is advisable to carry out the estimations in a well-equipped laboratory.

The book was designed as a brief survey of the subject of blood analysis for physicians and laboratory workers. Only those methods of analysis employed by the author are given in detail, with illustrations of particular types of apparatus used. Other methods might with advantage have been included, particularly those of Folin and Wu. The reasons for carrying out estimations of certain blood constituents are closely defined, and the results portrayed in the form of useful and clearly printed tables. A perusal of the methods given in this book will show that the technique is complicated and requires considerable practice before conclusions can be drawn from the results obtained. Exception may be taken to the term "renal diabetes" as giving rise to an entirely wrong conception. There is a distinct group of patients suffering from mild glycosuria without any of the clinical manifestations of diabetes mellitus. The condition is non-progressive, and needs no restriction as regards diet. A satisfactory diagnosis can only be made by an estimation of the blood sugar, which is invariably normal or subnormal. These patients are unfortunately labelled as "renal diabetes," when they present no evidence of renal insufficiency apart from the fact that their kidneys leak sugar, and they are not suffering from diabetes. Besides these there is a distinct type of parenchymatous nephritis with mild glycosuria and slight hyperglycæmia, which is included by Prof. Myers in the group of "renal diabetes"; these cases may perhaps be so labelled in the present state of our knowledge.

Physicians and surgeons who have reason to be interested in renal efficiency tests will obtain much useful information from a perusal of the chapters dealing with blood analysis of non-protein nitrogen, urea nitrogen, creatinine, uric acid, and chlorides, and also from the description of the phenolsulphonephthalein test, and the quantitative micro-methods of urine analysis. The importance of the determination of cholesterol in the blood is clearly recognised, and the author gives a simple, and apparently reliable, method for estimating this substance. The study of the variations in the cholesterol content of the blood is in its infancy, but bids fair to yield results of value.

To each chapter is appended a useful and fairly complete bibliography, and references are also given to various determinations of blood constituents which are of minor importance. The book is well printed, and contains a surprising amount of valuable information within small compass.

JOURNALS.

BRITISH JOURNAL OF SURGERY.—In the October issue, A. J. Walton discusses reconstruction of the common bile-duct in those cases where a cholecystenterostomy is unwise or impossible. He describes various groups of cases in which such a reconstruction is needed, and then reviews the usual operative procedures advised in the past. He gives the technique of an operation devised by him, first published in 1915, and a review of six cases in which he has used it.—Miss Maud Forrester-Brown examines a series of cases with a view to ascertaining the advantages and limitations of the many methods of bone grafting, more particularly in connexion with ununited fractures. In all she advocates a two-stage operation.—Sir D'Arcy Power's second eponym deals with the origin of "Baker's cysts" and "Baker's tracheotomy tubes."—D. P. Wilkie contributes an interesting article on Chronic Duodenal Ileus, the existence of which he has definitely established by a series of cases under his care. He goes on to describe the ætiology, pathology, symptoms, and treatment, and draws attention to the complications which may arise.—Zachary Cope describes five cases of appendicitis showing testicular signs.—E. E. Hughes records a case of spontaneous fracture of the humerus in an individual having obscure lesions in the right and left humerus, the right ischium, femur, tibia, and fibula. The lesions are not the same in all the affected bones, but some of them show unmistakable

osteitis fibrosa.—Sir Gilbert Barling publishes a series of 100 operations for gall-stones in private patients, referring specially to cases in which there was a recurrence of stones. He concludes that cholecystectomy is the operation of choice.—W. C. B. Meyer describes a case of the Klumpke type of upper limb palsy, caused by a cystic enlarged first rib. In addition to the bony lesion, there was a soft swelling in the subcutaneous tissues just above the left clavicle, and X rays revealed a second tumour close to the apex of the left lung. Operation relieved the symptoms and established the diagnosis of hydatid disease of the bone.—Valentine St. John describes four recent cases of tuberculosis of the flat bones of the skull, and suggests that the two generally accepted varieties are really only stages in the same process. He discusses the disease in all its aspects, emphasising the need for radical treatment.—Sir George Lenthal Cheatle continues his contribution on cystic changes in the breast; in this one he establishes a connexion between cystic and epithelial changes on the one hand, and the development of benign and malignant new growths on the other.—Sir W. I. de Courcy Wheeler records a successful reconstruction of the knee-joints in a girl aged 8. She had had acute osteomyelitis in both tibiæ, which resulted in bony ankylosis, on one side in marked flexion. A Murphy's arthroplasty was done on each knee with good results. He also gives an account of the reconstruction of a much damaged shoulder. The acromion, the deltoid, and the upper half of the humerus were missing, due to a wound. The loss of bone was repaired by a graft from the tibia, the loss of muscle and skin was overcome by transplanting the clavicular head of the pectoralis major and by a skin flap from the chest.—A. H. Burgess publishes a case of broncho-biliary fistula.—H. Poston gives details of a case of traction fracture of the lesser trochanter of the femur, which makes the twenty-fourth case recorded.—The operative treatment of closed fractures of the long bones by metal bands is discussed by E. G. Stanley and J. Gatellier, and details of a new instrument, devised by the latter, are given.—Accounts of visits to the clinics of Dr. Hugh Hampton at the Johns Hopkins Hospital, and of Sir Harold Stiles at Edinburgh are given.—G. G. Armstrong records a rare anomaly occurring in two patients, consisting in the absence of a mesentery for the terminal six inches of the ileum.—T. H. Kellock summarises the advantages of a two-stage operation in cleft palates.—The last part of the journal deals with instructive mistakes and notes on rare and obscure cases.

To the October number of the BRITISH JOURNAL OF EXPERIMENTAL PATHOLOGY L. Hill and J. McQueen contribute a paper, entitled Capillary Blood Pressure Measurement and the Glomerular Filtration Theory, which deals with the modern theory of the secretion of urine; evidence is brought forward to show that pressure in the glomerular capillaries is a low one, and that physiological permeation—not filtration—controls the passage of fluid through the glomeruli. Observations on the circulation in the frog's glomeruli are detailed and support these conclusions, which are also borne out by experiments of H. J. Hamburger demonstrating the selective action of the epithelium covering the glomeruli.—J. O. W. Barratt writes on the Theory of Agglutinin Estimation.—S. Yabe contributes an account of the Preventive Effect of Influenza Vaccine. In our statistics, he says, by the use of the heated influenza vaccine, the morbidity of those inoculated was reduced by a half as compared with the rate of those uninoculated. In other statistics, in which the inoculation was begun just at the commencement of the epidemic and was finished at its acme, this morbidity among the inoculated persons, as compared with that among the uninoculated, was reduced to one-sixth by the use of the vaccine. The complications from catarrhal pneumonia were lessened in the case of inoculated patients to one-half and deaths to one-seventh. The length of fever was less among the inoculated persons in proportion to the quantity of vaccine inoculated. The reaction after the inoculation was so slight that cessation from work was unnecessary.—J. Pratt-Johnson describes Comparative Immunity Tests with Saline Vaccines and Lipovaccines. (1) Lipovaccines prepared and employed in the manner described stimulate the production of agglutinins to a lesser degree than saline vaccines administered in the same doses. (2) The presence of a high titre of agglutinins does not necessarily indicate the presence of an established immunity even against small doses of a highly virulent organism. The same author, in Further Studies on the Production of Immunity in Rabbits against an Organism of High Virulence for the Species, describes experiments which demonstrate the possibility of securing the immunity of rabbits against an organism of high virulence by immunisation with a live related organism avirulent for the species. In this respect, Tenbroeck's observations are confirmed, and it is further shown that killed vaccines, prepared either from the homologous or from a related organism, fail to give solid immunity against the live virulent strain.—I. Walker Hall and A. D. Fraser discuss the pH Range for Staphylococci. The general pH range for the staphylococcal group extends from pH 2·6 to pH 10. But individual or group variations occur which do not exhibit any relation to saprophytic or pathogenic characters.

ST. BARTHOLOMEW'S HOSPITAL JOURNAL.—The October issue is in the main a freshman's number, for most of the matter is concerned with impressing upon those who are entering upon their medical career the importance of the work which they have undertaken, the difficulties thereof and how they should be met, and the fact that St. Bartholomew's Hospital is the best hospital in the world. Other hospitals think the same, and it is well that they should do. But St. Bartholomew's has at least one asset which no other hospital in the Empire has, with the exception of that dedicated to the same saint at Rochester—namely, a record of eight hundred years. The paper entitled "The Making of a Doctor," written from four points of view by four men of experience and distinction, is full of sound sense. The school is to be congratulated upon having obtained a Royal Charter of Incorporation, the text of which is given in full.

THE current issue of the JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE opens with a paper of great interest on eight cases of infection by *Schistosoma japonicum*, by Surgeon-Commander A. A. Sanders and Surgeon Lieut.-Commander J. L. Priston. The cases were contracted through wading in marshes during shooting expeditions in the Yangtse Valley. Clinically they were characterised by pyrexia (in one case lasting three weeks), urticaria, serious loss of weight, and eosinophilia. Ova, without any spine, are found in the fæces only. Antimony tartrate appears the most encouraging treatment.—Surgeon-Commander G. O. M. Dickenson writes on venereal disease in the eighteenth century, his text being a book by N. D. Falck, surgeon, 1772, who recommended mercurial ointment and a calomel injection as prophylactics, saying: "If I am blamed for this openness; I answer in my defence; my talk is to endeavour to do good: I cannot prevent abuse." The present instalment of the naval medical history of the war concerns the hospital ships.—Surgeon-Captain F. J. A. Dalton gives a detailed account of the treatment of the wounded who came from Gallipoli, and emphasises the need in a hospital ship for large well-ventilated theatres such as he had in *Rewa*. Surgeon-Commander A. R. Fisher tells of the hospital yacht *Liberty* attached to the Dover patrol. Excision of wounds appears to be less necessary on board ships. He found irrigation with Dakin's solution less satisfactory in *Liberty* than it had been in *Rewa*, but in *Rewa* the solution had been made up by Dr. Dakin himself.—Surgeon-Commander L. Kilroy recommends the immediate treatment of syphilis on board ship rather than in hospital.

THE LANCET.

LONDON: SATURDAY, OCTOBER 29, 1921.

The Capitation Settlement.

ON Thursday last agreement was reached between the Minister of Health and insurance practitioners in regard to the amount of the capitation fee to be paid to the practitioner on account of medical benefit under the Insurance Acts. The annual Conference of Representatives of Local Medical and Panel Committees held on this day—we summarise its proceedings on another page—reaffirmed its opinion that 13*s.* 6*d.* was the lowest capitation fee that should be offered for effective service, and that no justification existed for demanding any reduction below the arbitration award of 11*s.* in March, 1920. At the same time the Conference frankly recognised the force of the Minister's appeal to make some sacrifice for the common good in a great financial crisis, and after a deputation to the Minister from the Conference had ascertained that the state of the Exchequer did not admit at present of any higher fee than 9*s.* 6*d.*, the Conference agreed with unanimity and good humour to instruct its executive to accept the Minister's offer on grounds of citizenship. It was accepted on both sides that the question of the arbitration award was not reopened upon its own merits, but that, simply in view of the present admittedly desperate financial position of the country, panel doctors were prepared to bear their own share of sacrifice, provided that in so doing the public health did not suffer. That is, of course, the really crucial point. Speaking as chairman of the executive, Dr. BRACKENBURY is reported as having said to Sir ALFRED MOND: "We do feel that there is a serious danger of the service becoming an unsatisfactory one"; a remark which has only been misunderstood in certain quarters because it has been taken apart from the speaker's assurance at the Conference that, whatever the capitation fee accepted, the panel doctor would render his best to his patient. It cannot be stated too forcibly that no question whatever arises of an insurance practitioner cutting his work to fit the reduced fee; but it is also abundantly clear that it is only a contented service which can produce results satisfactory to the panel patient. Fortunately, the Minister of Health, in regretting his inability to reconsider the fee of 9*s.* 6*d.*, was willing to guarantee its continuance for a period of two years, and in so doing eliminated, for a brief period at least, one disturbing element of uncertainty in the practitioner's daily life; at the same time he promised to see whether the reduction could be stated as rebate rather than depreciation of the basic fee.

Sir ALFRED MOND, in the course of conversations, had already assured the panel executive that any sacrifice made by the medical profession now would not prejudice future discussion, for the Minister of Health has definitely promised that the whole subject of the administration of the Insurance Acts in regard to their effect on the health of the people shall fall under early review. This is the more likely to come about speedily, as both parties administering medical benefit express their desire for a wide and searching investigation, whereas by waiting until next spring a period of two complete years of medical benefit under the revised regulations will have elapsed. The official organ of the approved societies deprecates an inquiry at the present moment of extreme financial stringency. It may be recalled in passing that the total cost of medical benefit in England for the year 1920 approached £8,000,000, of which approximately £6,700,000 was paid to panel doctors. Other cash benefits under the Acts cost practically the same amount; sickness benefit, the principal of these, at its present enhanced rate of 15*s.* a week, is still actually less than the payment made to persons who are well but unemployed, and if only on this ground is likely to be increased rather than reduced. The cost of medical benefit is being met in the proportion of rather less than a half by the Exchequer and rather more than a half by the combined contributions of employers and employed, the ratio being roughly 19 to 22, and the reduction in the doctors' remuneration will be applied wholly in relief of Exchequer payments. With a working agreement reached on the subject of the capitation fee it becomes superfluous to consider how the sickness insurance principle would work out in this country in the absence of medical benefit, but it remains of interest to note the experience of Ireland where, from the first, this benefit was not granted.

INSURANCE WITHOUT MEDICAL BENEFIT.

THE reasons why the medical benefit clauses in the National Health Insurance Acts did not apply to Ireland may be recalled with advantage. The Irish Poor-law system of medical attendance, which has now been in existence since the middle of the last century, provides medical treatment for every "poor person," whereas in England only a "destitute poor person" is entitled to attendance by the parish doctor. The term "poor person" has never been defined, as used in the Irish Poor-laws, and its vagueness has given rise to innumerable disputes, for it has permitted a large portion of the population to take advantage of rate-paid medical treatment without any proof of their right to such assistance. In other words, general practice as understood in England is almost unknown in rural Ireland. In the country districts not only all the wage-earning class, but also the small farmers have received habitually their medical attendance under the Poor-laws. Of course, while general practice, with its advantages, is largely absent, the club system has been also unable to flourish with all the abuses which centred round it before the passage of the National Insurance Act. There have been, of course, medical clubs in Dublin, Cork, Limerick, and some other of the larger towns, as well as in Belfast and a small industrial area in Armagh. Where clubs have existed abuses have not always been absent, and as a matter of fact it was the revolt of medical practitioners in Cork against the tyranny of club practice which started organised opposition against such abuses in England.

It was clear, therefore, that had the medical benefit of the Insurance Act been applied in Ireland, there would have been overlapping of two heterogeneous systems, one by which the whole population might enjoy rate-paid benefit by ranging itself under the undefined epithet of "poor," and one by which employers, employed, and the State provided medical treatment for a defined class. This is not the whole explanation of why the Bill was amended for Ireland as regards the medical benefit clauses before it became law; politics, of course, played their part. The Bill, which, as a whole, had roused the opposition

of the employers, while offering little temptation to the employed, was altogether unacceptable to the Irish National Party, and it was by a compromise with this opposition that the Government consented to remove the medical benefit from the Bill in its application to Ireland. The medical profession, though it made no formal decision on the point, was, on the whole, in favour of the Bill being the same for Ireland as for Great Britain. The medical benefit not applying in Ireland, it might have seemed that the medical profession would have no further concern with the Act, but it speedily appeared that their coöperation was necessary. For the administration of the sickness benefit medical evidence of incapacity was required, and the profession on this point made two demands: (1) that the evidence should be a certificate from the insured member's medical attendant, (2) that there should be provision for adequate payment for certificates. It is not necessary to go into the details of the bitter triangular struggle which lasted for nearly three years between the medical profession of Ireland, the officials of the approved societies, and the Irish Insurance Commission, before the points demanded by the profession were finally granted. Since the beginning of 1916 a scheme for the provision of evidence of incapacity has been in operation which, on the whole, has given substantial satisfaction to all parties concerned. The certificate of the medical attendant is accepted as evidence of incapacity, subject to appeal under certain conditions.

It will be seen, therefore, that whereas a panel practitioner in Great Britain is concerned under the Insurance Acts to supply treatment to insured persons and to give evidence of their incapacity, his confrère in Ireland is only concerned with the giving of evidence of incapacity. The position has failed to give satisfaction either to the medical profession or to the insured. The latter fail to see why they are left unprovided with the medical attendance which is given to their fellow-members in Great Britain. They resent the implication that they should make use of the Poor-law system, and be compelled to plead their poverty to obtain what insured persons in Great Britain receive as a right. They have persistently demanded that the medical benefit should be provided in Ireland as in Great Britain. The heads of the large societies, which operate in both countries, have pointed to a higher incidence of sickness among their members resident in Ireland than among those in Great Britain, and they have assigned the absence of the medical benefit as the cause of this higher incidence. The demand for the provision of medical benefit in Ireland was made with great force by the representatives of the Approved Societies to the Irish Public Health Council in 1919–20, although they were willing to consider other methods than the panel system of providing medical attendance in Ireland, should special conditions render some other system more convenient. Turning to the medical profession in Ireland, it has been equally dissatisfied. It has deplored the imperfections of the system of medical attendance under the Irish Poor-laws as degrading to the working classes, and owing to the conditions of service, equally degrading to the medical practitioner. But there has been a sharp difference of opinion as to the best policy to be adopted. In the industrial areas in and near Belfast the demand has been for the panel system as it is in Great Britain, leaving Poor-law reform aside as a separate problem. But the country doctors generally, and the great bulk of the profession throughout Ireland, thought that the two problems should be dealt with together, and urged as a solution the establishment of a part-time National Medical Service which should provide treatment both for the "poor person" and for the insured, the latter contributing as in Great Britain. This scheme found favour with the Irish Public Health Council, which, in its report published more than a year ago, urged the establishment of such a Service. No steps were taken by the Government to carry the advice of its Health Council into effect. It is likely, however, that when a legislature is effectively established in Ireland, reform will follow the general lines of the report of the Irish Public Health Council. At any rate, the working classes are not willing to rest content without the provision of medical treatment on a contributory basis and free from any taint of pauperism.

Methods of Contraception.

THE publicity given to Lord DAWSON'S address on the practice of birth control emphasises once again the immense importance attached by the public to medical opinion on this subject. Lord DAWSON spoke chiefly on the ethical and sociological aspects of the subject. The opinions he expressed will be shared by many of his colleagues in the profession; many would go farther and some would go less far. But, as we have pointed out, any practitioner is liable to be drawn into a discussion on the propriety of the artificial prevention of conception in certain given circumstances, and if he will not or cannot answer a definite question on the relative merits of different methods, the patient may be driven into hands less scrupulous and also perhaps less judicious.

The fact is that, contrary to a public impression, the doctor is not familiar with the scientific aspects of the subject, which have not as yet been thoroughly worked out, and there is no easily accessible medical literature pointing out the advantages and disadvantages of the various methods of contraception in current use. In THE LANCET recently we set forth the present position in the following words:—

> No part of the medical curriculum deals adequately with the applied anatomy, physiology, and pathology of the reproductive system. In certain physiological text-books detailed consideration of this system is omitted; in others it is disposed of in a brief chapter. Few teachers discuss openly and clearly with students the genesis, the psycho-physiological significance—with due reference to reaction time in either sex—of the sexual orgasm. Later on the gynæcologist is more concerned with the retained products of conception than with its prevention, and the venereal expert with problems of infection rather than human and social problems. And yet not only the gynæcologist and the venereal expert, but the neurologist and the alienist are daily concerned with the end results of the sexual life of the patient. Not only the ethics of the control of parenthood, but the less undesirable methods of control should be familiar to the profession; the public is prepared to turn to the doctors for guidance, and it is not the fault of the public that doctors are ill-equipped to give it. Even the subjects of impotence and abortion are better understood, though chiefly from the medico-legal standpoint. But any qualified doctor should be placed in a position to inform first himself and then, at his discretion, his inquirer, firstly, of the arguments for and against contraceptives, and secondly, of the relative degree of nervous wreckage to be anticipated from the use of any one method.

There is as yet nothing to be added to these generalities. The interest aroused by Lord DAWSON'S courageous address makes the gap in medical knowledge a very noticeable one, and steps are already being taken at least to take stock of the present position. The Federation of Medical Women chose this subject for consideration at their first meeting of this session, which we report on p. 908 of our present issue. The Medical Council of the Federation of Medical and Allied Societies are discussing the question, and no

question can more fitly appeal to the consideration of a society whose fundamental idea is to correlate medical thought and endeavour with public work for general progress in health policy. We hope, therefore, that many persons of real experience along special lines as well as those who occupy public positions where knowledge of various sides of the question is necessary, will participate in the discussion; and we commend the subject to the consideration of other medical societies. A joint meeting of gynæcologists and neurologists might clear the ground of some of its rough places.

Small-pox and Vaccination in U.S.A.

THERE is indisputable evidence that during recent years small-pox has been increasing in the United States, giving rise to some uneasiness in responsible quarters. Inquiry has of late been made into the matter by two experts whose report [1] was published in a recent issue of the U.S. Public Health Reports. Until quite recently the collection of health statistics in the United States was attended with difficulty and their accuracy was sometimes in doubt; but for the purposes of the above-named report it was found possible to obtain trustworthy official figures for the six years, 1915 to 1920, regarding the incidence of small-pox in 20 States, the combined population of which was estimated at 51 millions. At the same time evidence was obtained showing how the law as to vaccination, especially of school-children, was being enforced or neglected in each of these 20 States. A study of these collected facts and figures was then made, with a view of determining, as far as possible, the geographical distribution of the increased incidence of small-pox, and its relation with the vaccinal condition of the inhabitants as judged by the way in which the vaccination law in each State was enforced. The average rate of small-pox incidence in each State during the six years period was calculated by the formula $R = \frac{1000\ T}{6\ P - 15\ D}$, T representing the total number of officially reported cases for the period, P the 1920 population, D the annual increase (one-tenth of the intercensal difference), and R the rate of small-pox incidence per 1000 of the population. A list was then made of the 20 States in the order of their small-pox incidence-rate, the States showing the lowest rate coming first. The three States which had the lowest average small-pox rate were New York, with a rate of 0·026 per 1000, New Jersey 0·027, and Connecticut 0·09. The three States with the highest rates were Oregon with a rate of 1·48, Washington 1·72, and Kansas 2·0 per 1000 of the population. The 20 States were classified into four groups, according to their geographical position—namely, (1) Eastern, (2) Southern, (3) Pacific, and (4) Central. The average small-pox rate for the Eastern States was 0·04, for the Southern 0·58, for the Pacific 0·91, and for the Central States 1·14. The States of New York, New Jersey, and Connecticut, which had the lowest rates, are included in the Eastern group. Oregon and Washington, which were among the highest rates, are in the Pacific group, and Kansas, which had the highest rate of all, is in the Central group of States.

There is no general vaccination law for the whole of the United States, but vaccination of children is generally secured by making it a condition of admission to school. Each State makes its own enactments as to vaccination, but in some States, although the law exists, it is not enforced. Vaccination of school-children appears to be well carried out in the Eastern States, particularly in the State of New York, where vaccination is a condition of school attendance in cities of the first and second classes, in which it is estimated that 100 per cent. of school-children are vaccinated. Outside the larger cities the enforcement of vaccination is less satisfactory. In the State of New Jersey the law directs that boards of education may prohibit the attendance of any unvaccinated child at school. This condition is strictly enforced in the large cities. In this State vaccination campaigns at previous times of epidemic small-pox have, in some instances, resulted in the protection of about 80 per cent. of the community. The attitude of the citizens of the Eastern States to vaccination is on the whole favourable. On the other hand, in the Pacific and Central States this attitude is less satisfactory. The exclusion of unvaccinated children from school, although enacted by law, is frequently not enforced. In the State of Washington the law has been neglected for some years, and in 1919 it was finally repealed altogether. Kansas, with the highest incidence-rate among the 20 States, does not enforce vaccination, and even in some of what are termed "progressive districts," approximately 80 per cent. of the school-children are unvaccinated. From consideration of the above and other facts and figures, it appears to the authors of the report that small-pox prevalence "depends upon the popular vote." In those States where popular sentiment backs up the enforcement of vaccination, small-pox is practically negligible. Where, however, the law gives discretionary powers to local authorities, or to individuals, as regards enforcement of vaccination, the small-pox incidence-rate tends to rise; and where there is absence of compulsory powers, or in States where there is no vaccination law at all, small-pox reaches a high average rate of incidence.

The type of small-pox now prevalent in the United States is, as our readers are aware, comparatively mild. But there is no assurance that this type will continue. There is always a possibility of the introduction of a more virulent strain of the infection into the States from Mexico or South America, where small-pox is continually occurring. The fact that nearly 58,000 small-pox cases were reported during 1920, in the 20 States under consideration, containing only about half the population of the United States, is a sufficient proof that the disease is widespread and likely before long to become severely epidemic in the absence of general vaccination. In view of the large amount of available evidence it is useless to deny nowadays the favourable influence which vaccination exerts in the protection of communities and individuals against small-pox. But, as in the past, it will need a severe shock in the form of a serious and fatal epidemic to rouse the public, not only in the United States but in England as well, from the sense of false security into which it has fallen as regards small-pox and the prophylactic value of vaccination and revaccination.

[1] Small-pox in Twenty States, 1915 to 1920. By John N. Force, Special Expert; and James P. Leake, Surgeon, U.S. Public Health Service. Public Health Reports for August 19th, 1921.

UNIVERSITY OF LEEDS.—Sir Edward Brotherton's gift for the endowment of bacteriological work at the University, to which we have already referred, was officially reported to the University Council on Oct. 19th. A resolution of appreciation was passed and the Council announced their intention of founding a chair of bacteriology, to which will be attached in perpetuity the donor's name.

Annotations.

"Ne quid nimis."

MEDICAL DEFENCE.

AT the annual meeting of the Medical Defence Union, Ltd., held on Oct. 20th, at the rooms of the Medical Society of London, Sir Charles Ballance (President), in moving the adoption of the report for 1920–21, said that after his experience on the Council during the past 12 months he could not understand how any medical practitioner could fail to take advantage of the protection and security afforded by membership of the Union. Consideration of the report shows the Council to have good grounds for their claim that no diminution is to be found of the estimation in which the Union is held by the profession and by the general public. The total of membership reached a higher figure than in any previous year, and the Council is satisfied that the new arrangement whereby the premium for the Indemnity Insurance is included in the annual subscription (now raised to £1) payable by every member of the Union, is very generally appreciated. The single payment provides what is practically complete cover against all pecuniary risk, for, subject to certain conditions, each member of the Union is assured of indemnity against damages and costs to the extent of £2500 awarded against him in any case undertaken on his behalf by the Council of the Union. The report contains a reiteration of the warning previously given of the danger of placing the sale of a practice in the hands of more than one medical agency. In order to safeguard the interests of panel practitioners who employ assistants in their panel work, an addition has been drawn up for insertion in the restraining clause embodied in the ordinary agreement between principal and assistant; by this addition (1) the assistant undertakes to withdraw from the panel upon the termination of his assistancy, and (2) the principal is empowered to give notice on behalf of the assistant in the event of the assistant declining to do so. A form of restraining clause for the use of members has been drafted by the solicitor to the Union. No success attended the representations made to the Civil Service Commission by the Council with reference to the fee charged for the test examination—an examination invariably waived—of medical practitioners appointed on the staff of the Ministry of Health; but in every other direction the efforts of the Union on behalf of its members seem to have resulted in benefit to the latter. Disputed accounts, recovery of inquest fees and of moneys spent on vaccine for preventive inoculation of insured persons, difficulties with unsatisfactory locum-tenents, cases of forgery of practitioner's names—these and numerous other difficulties have been dealt with. The report points out that no medical practitioner enjoys immunity from attack, however skilfully and conscientiously he carries out his professional duties, and it is satisfactory to see the results of the Union's action in support of medical men who, failing that action, might have sustained more or less serious loss, either of reputation or of just material increment.

DIET IN RELATION TO NORMAL NUTRITION.

THE principles underlying the subject of dietetics, with valuable illustrations upon the proper selection of foods, are clearly expounded in a recently issued report (No. 9, On Public Health and Medical Subjects), by DR. J. M. Hamill, a medical officer of the Ministry of Health. They have been put together after numerous requests and are intended to give authoritative information to medical officers of health, medical practitioners, teachers, and lecturers. It is desirable that this information be widely disseminated, for much ill-health and physical impairment is due to dietetic deficiency from improper selection and use of foods. Many cases of vague ill-health may be caused by some inadequacy of the diet, and it is probable that numerous people are consuming a diet on the verge of inefficiency. The question of deciding what is sufficient and suitable food, or when a diet may be regarded as satisfactory, depends upon certain very definite principles. A large amount of physiological and biochemical research has been devoted during the last two or three decades to the elucidation and establishment of the essential factors. The different kinds of foodstuffs are not by any means of equal value, as is readily seen from the data of their chemical analyses; the food must contain adequate amounts of the so-called accessory food factors or vitamins, which at present cannot be expressed in concise terms. Food must firstly supply the energy needed for the maintenance of body temperature and for muscular work; the quantity so required depends upon the nature of the work, and varies from 2750 calories for sedentary work, such as that of a tailor, to 5500 calories for heavy work, such as that of a woodcutter, and higher quantities for still harder work. The figures are based on the requirements of a man of an average weight of 70 kilos. Body-weight is a variable, higher body-weight, of course, requiring a larger number of calories, while the lighter man requires relatively more calories per unit of body-weight. Weight for weight, woman requires less than a man, on the average one-fifth less. Children's requirements vary from 0·5 to 0·83 of that of a man, depending on their age, up to 14 years. Either of the proximate principles of the food (carbohydrate, fat or protein) can furnish this energy, but it is most adequately supplied by carbohydrate and fat, these two groups being, within limits, interchangeable. The function of protein is to replenish the wear and tear of tissues and to provide for growth. The most difficult problem is to decide the minimum quantity of protein required daily; the figure given by Atwater is 100 g. for light work, increasing to 125 g. for medium, and 150 g. for hard muscular work. For short periods less protein may suffice, even as little as 40 g. per day. In ordinary circumstances the analyses that have been made show that the usual consumption for light to medium work is from 80 to 100 g.; the lower amounts are fully adequate if the protein is largely of animal origin. The value of protein depends entirely upon the nature of the constituent amino-acids, many vegetable proteins being deficient in one or more of certain amino-acids which are absolutely necessary for life. The nutritional value of proteins of different sources has been compared and the results expressed under the term Biological Value of Proteins. Not only, therefore, must protein be sufficient in quantity but also of sufficient biological value; a diet containing protein of too low a biological value is now considered a probable cause of pellagra. A suitable mixture of inorganic salts is another important consideration in selecting a proper diet. The mineral requirements of the body are not so well known as the energy or protein requirements, but are satisfied by an ordinary well-mixed diet. The vitamin requirements are generally met by an ordinary well-mixed diet of natural foodstuffs. Disorders arising from vitamin deficiency can usually be traced to an ill-balanced diet or to a well-balanced one spoiled by commercial processes of manufacture or by improper cooking. The effect of commercial processes is best exemplified by the milling of cereals, which removes the B-vitamin. The suggestion that the loss of vitamin B of the grain may be compensated by baking with yeast has not been substantiated. The antiscorbutic or C-vitamin is present chiefly in fresh fruit and vegetables, and, again, these are variable. Oranges, lemons, cabbage, lettuce, &c., are richest in this vitamin. C-vitamin is a very unstable substance, the effect of ordinary drying processes being to destroy it; cooking has also a destructive action. The A-vitamin is contained in certain fats and green leaves. Butter is rich; lard poor; margarine varies according to its composition. All vitamins have their origin in vegetable food.

Milk fat will be deficient in A-vitamin if the animal be not fed upon food containing it, such as green leaf, which is its ultimate source. The antiscorbutic value of milk depends upon the animal's food. The two best foods are milk and green leaves. Milk supplies good protein and mineral matter, and vitamins if from properly fed animals. Green leaves are said to contain good protein, and they are certainly rich in vitamins. An ill-balanced diet will therefore be made adequate by the inclusion of milk and green vegetables.

THE SOLDIER'S LOAD.

WHAT weight can a soldier carry and yet march and fight well? Major N. V. Lothian deals with this important question in the opening paper of the *Journal of the Royal Army Medical Corps* for October. The diseases ascribed to overloading have been pulmonary emphysema, so-called soldier's heart, and, tentatively, trench nephritis. Some burden the soldier must have: arms, armour, spade, clothing, food, to which he adds souvenirs; together these cannot weigh less than 40 lb., and men have carried 88. The problem has faced soldiers of all times. The Athenian hoplite in battle carried 80 lb., but each had an attendant to carry his equipment to the field. Thus heavily weighted they were little mobile, consequently no sooner were they, as we may put it, standardised, than light infantry in considerable numbers were added to all armies, and it was these who gave Philip of Macedon much of his success. If a soldier is well trained he can carry greater weights more easily, so the Romans specially trained their recruits to carry a load of 45 lb., while the legionaries each month did three 20-mile route marches in heavy marching order, carrying about 50 lb. His pack he carried on a forked stick, introduced into the service by Marius, and called after him, "Marius's mule," but much of his burden was, on service, borne for him by a servant (calo) or in carts, as may be seen on the column of Trajan and elsewhere. Major Lothian's paper is a valuable contribution to military science, worthy of the Army School of Hygiene from which it comes, though it is defaced by careless printing of Latin words.

IRRADIATION OF LYMPHOID TISSUE.

As a result of clinical and experimental investigations into the action of radium and X rays upon normal and diseased lymphoid tissue carried out in the Department of Cancer Research of the Montefiore Hospital, New York, Dr. Isaac Levin[1] concludes that the lymphocytes in the blood stream and lymphoid tissue generally throughout the body are extremely sensitive to these radiations. Dr. Levin is not alone in this opinion: reports issued from various centres of radium-therapy will generally be found to include data showing the remarkable susceptibility of diseased lymphoid tissue to radium. Lympho-sarcomata figure among the tumours giving the highest percentage of favourable clinical results. Dr. Levin's paper consists for the most part of short descriptions of clinical cases illustrating his conclusions. Apart from the immediate clinical results, his observations are valuable as factors which must be taken into account when any sort of generalisation is attempted on this subject. More recent studies have shown that the physiological response of the organism must in no case be ignored when generalised exposures to radiation are given. Levin states that the rays do not act merely as a local agent, but produce a generalised effect on the lymphoid system of the whole organism. The evidence for this statement is based upon observations such as the following. In a case of lympho-sarcoma, examination showed a large diffuse mass occupying the whole of the right axilla and invading the pectoral muscles. In the left axilla was an enlarged freely movable gland, the size of a hen's egg. The radium applications were made only at the right axilla, with complete disappearance of the mass there, as well as that in the other axilla; this and other cases cited by the author are probably paralleled by the experiences of radiologists elsewhere. Dr. Levin comments upon the hypothesis that specific enzymes are freed from the disintegrating lymphocytes, but offers the timely reminder that hardly any work has yet been done to clear up the problem. As the field of utility of these radiations widens in medicine, the necessity for investigations becomes increasingly urgent, for the feeling of insecurity of any practice based upon empiricism increases with the dimensions of the superstructure.

[1] Journal of the American Medical Association, Sept. 17th.

THE EFFECTS OF PROLONGED DEPRIVATION OF SLEEP.

Prof. G. W. Crile,[1] in his recent studies on exhaustion, has extended his observations on this subject, and has determined the effects in rabbits of prolonged deprivation of sleep—96–118 hours. Marked changes are thereby produced in the cells of Purkinje in the cerebellum; in the first stage there is an increase of the chromatin material—both in its diffuse and particulate form, in the plasma and size of the nucleus; the cells contain an average amount of chromatin, but changes manifest themselves in the dendrites. Then the chromatin diminishes, and its remains collect around the periphery of the cell and nucleus. In the next stage the chromatin completely disappears, the cytoplasm showing disintegrative changes, and vacuolisation; somewhat similar changes affect the nucleus, and in extreme cases there seems to be death and complete disintegration of the cells. It is suggested that neither man nor animal can survive the loss of 15 per cent. of the brain cells. In eight experiments, six animals showed more or less pronounced changes in the liver, especially at the periphery of the lobules. The nuclei lay excentrically and were deformed, the granules diminished or absent, vacuoles were present and the cell as a whole materially changed, including the disappearance of its glycogen. In five cases out of six the medulla of the adrenal glands was not affected, while the cortex in six out of eight cases showed changes and disintegration after loss of the nuclei. No marked changes were noted in the thyroid, pancreas, kidneys, spleen, stomach, or intestines. By inducing sleep at the end of a sleepless period, and by the action of different agents, the author endeavoured to mitigate the effects and restore the activities of the injured cells. Sleep and nitrous oxide have a marked recuperative effect, except in cases where the disintegration of the brain cells has proceeded too far. As experimental poisoning by acids produces similar changes in the cells of the brain, liver and kidney, the pH of the blood was determined, but it was found that sleeplessness produced no marked change, the pH being nearly the same during the sleeping as in the waking condition.

THE PREVENTION OF DIPHTHERIA.

LAST winter the incidence of diphtheria was high, the mortality correspondingly high, and the number of cases notified so far this autumn points to a severe winter epidemic. In America the mortality from diphtheria is apparently heavier than it is in England, and the public health authorities there are instituting a campaign to stamp out the disease on the principle that since its prevention and cure are known, the disease should be eradicable. The method of the campaign is to confer active immunity on all children between the ages of 6 months and 6 years by the injection of three doses of toxin-antitoxin, thereby rendering the children insusceptible of infection for several years or maybe for life. This is especially applicable to young children, as the mortality from diphtheria as well as the incidence of the disease is vastly greater in the younger age periods. Children at birth are found by means of the Schick reaction to have a natural immunity to diphtheria, which fades away

[1] Archives of Surgery, vol. ii., 1921.

gradually after the sixth month, leaving the child more susceptible during the first six years than at any other period of its life. The practical value of such a campaign, of course, depends upon two assumptions—viz: 1. That the Schick reaction is a reliable indicator of susceptibility to diphtheria. 2. That the injection of toxin-antitoxin actually confers active and lasting immunity. We pointed out some time ago that the crucial test of the value of the reaction had not been carried out, as no cases giving a negative reaction had been purposely infected with diphtheria. Whether toxin-antitoxin confers lasting immunity has yet to be demonstrated. So great, however, is the confidence in America that the methods proposed will stamp out diphtheria that public health authorities are beginning to hold parents responsible if their children contract the disease. This standpoint is strikingly illustrated by a letter sent by the sanitary authority in North Carolina to every home in which diphtheria occurred last year:—

"Dear Friend,—We regret that you had a case of diphtheria in your home last year. We appreciate the care you took to keep this disease from spreading to others in your home or community. In the future you will be responsible if you have a case of diphtheria, as the North Carolina State Board of Health is preparing to furnish the doctors and the health officers toxin-antitoxin. When three doses of this are given, the person is protected against diphtheria for several years, possibly for life."

The importance of the issue is great and is worthy of earnest consideration and investigation on the part of those responsible for the maintenance of public health in this country.

GENERAL PARALYSIS IN OLD AGE.

Dr. Heinrich Herschmann,[1] assistant at the Psychiatric Department of the Vienna General Hospital, has made a clinical study of 84 cases of general paralysis which developed after the age of 60. Eighty of the patients were between 60 and 70 at the onset of the disease, and only four were over 70, the oldest being 75. Fifty-eight were males and 26, or about a third of the total, females. The relatively high proportion of women among aged general paralytics, a circumstance which had been previously observed by Kraepelin, Junius, and Arndt, is all the more remarkable as syphilitic infection after 50 is much rarer in women than in men. It is probable, therefore, that the interval between infection and the onset of general paralysis is longer in women than in men. The greater frequency of alcoholism in the male sex and the more intense strain on the nervous system caused by the struggle for existence probably account for the shortening of the incubation period. Of the 84 cases in the present series, 66 were kept under observation until their death, while the rest were sent home. The average duration of the illness of the 66 cases, reckoning from the time of their admission to the clinic, was 263 days, so that senile general paralysis does not assume a particularly rapid course. In only 22 of the 66 cases was death due to cachexia alone, the causes of death in the other cases being convulsive attacks, pneumonia, myocarditis, atheroma, or enteritis. The number of cases of tabo-paralysis was high, no less than 21, or exactly one quarter of all the cases, showing tabetic symptoms. In the 20 cases in which the date of syphilitic infection could be determined the length of the interval between it and the onset of general paralysis was remarkable; in six cases infection had occurred more than 40 years previously, in six more than 30 years, in seven more than 20 years, and in one 12 years before the onset of the psychosis. According to Dr. Herschmann, the special features of senile general paralysis are the rapid development of dementia, the loss of the power of orientation, nocturnal delirium, and, most of all, the frequency of the paranoid form. He suggests that this peculiar symptomatology is due to the histopathology of senile general paralysis, which will form the subject of a future communication.

[1] Medizinische Klinik, Oct. 9th, 1921.

RADIOLOGY AND PHYSIOTHERAPY.

IT was announced at the recent annual meeting of the British Association for the Advancement of Radiology and Physiotherapy that a certificate of incorporation had just been secured. Dr. Robert Knox, from the presidential chair, reviewed the work accomplished by the Association during the four years since its foundation, referring to the share taken in the institution of the Cambridge diploma in medical radiology and electrology. In conjunction with the Institution of Electrical Engineers, the Association had been successful in founding the Society of Radiographers, the Council of which was appointed in equal ratio by the B.A.R.P., the Institution, and the general body of its own members. The constitution of the Society of Radiographers had been approved by the General Medical Council, inasmuch as its diploma of membership (M.S.R.) was obtainable by examination only, all its members undertaking not to accept any patients for diagnosis or treatment except under the direction of a qualified medical man. In addition to its educational activities, Dr. Knox mentioned the policy recently initiated by the B.A.R.P. of issuing authoritative statements on medical subjects to the daily papers. The issue of manifestos approved by the Council but otherwise unsigned appeared to him to fulfil the joint requirement of being authoritative and at the same time free from any suggestion of personal bias. Dr. Knox expressed a hope to see in London some day a worthy institute of radiology, having its own museum and library, and perhaps its own clinic, and giving every possible facility for teaching and research.

THE UNSOLVED MYSTERIES OF ARTERITIS.

WHEN a pathologist with an international reputation publishes a series of cases closely observed by skilled clinicians during life, and searchingly investigated after death; and when his detailed summing-up ends in a frank avowal of ignorance, of inability to fix a truthfully descriptive label to the case, we are reminded that the sense of complete and nicely rounded-off knowledge is, most fortunately, withheld from every explorer. A few years ago our knowledge of the causes of arteritis was hardly even elementary, and when the relation of endarteritis to syphilis and of arteritis to tuberculosis had been noted, there was little more to be said—of importance, at any rate. Recent research has, indeed, added greatly to our appreciation of the part played by arteritis in such widely different diseases as CO poisoning, influenza, typhus and cerebro-spinal fever. That curious disease, periarteritis nodosa, is also better, though still imperfectly, understood. These recent advances should not, however, obscure the fact that we are still groping about the fringe of the problem, and this is the lesson on which Prof. F. Harbitz conscientiously insists when, in *Norsk Magazin for Lægevidenskaben* for September, 1921, he records one case after another of obscure arteritis observed at the Pathological-Anatomical Institute in Christiania. One of his cases was that of a man of 22 who was subject to idiopathic renal hæmorrhage. After it had continued off and on for about a year decapsulation was performed, and a piece of kidney excised for microscopic examination. This showed nothing abnormal, but as the hæmorrhage continued the whole kidney was removed. Its macroscopic appearance was normal, but the microscopic examination showed necrotic foci within which the arterioles were diseased; their walls were swollen, and the lumen of each vessel was reduced, in some places to the point of obliteration. The swelling of the walls was partly due to proliferation of the intima, partly to hyaline degeneration of the connective and elastic tissues. There was no sign of inflammation, syphilis, or arterio-sclerosis, and if the case was one of periarteritis nodosa, then this disease does occasionally develop as a strictly localised phenomenon. Arousing without satisfying curiosity, this case shows that the term idiopathic renal hæmor-

rhage is apt to be misapplied, the hæmorrhage being due to organic disease of the kidney. In addition to another case of inflammation of the arteries and veins of the skin associated with purpura rheumatica, Prof. Harbitz records two cases of arteritis of the brain. He concludes that true arteritis is much more common than was formerly supposed to be the case, that its causes are very varied, and that the task of distinguishing between the yet unknown forms of arteritis and those of syphilis, periarteritis nodosa, and even of tuberculosis may be extraordinarily difficult.

HEMIHYPERTROPHY AND MENTAL DEFECT.

Dr. Arnold Gesell,[1] of New Haven, Connecticut, who reports an example of hemihypertrophy associated with mental defect, describes hemihypertrophy as one of the rarest of developmental anomalies. He has collected 40 cases of true hemihypertrophy or total unilateral hypertrophy, including one under his own care, and 30 examples of partial and crossed hypertrophy which is much more common. Of the 40 cases only 5 were adults, 19 were males, 17 females, and in 4 the sex was not specified. In 27, or almost 70 per cent., the hemihypertrophy was on the right side. In 15 cases it was definitely stated that all the tissues were involved in the hypertrophy, in 19 cases abnormalities of the skin were mentioned as a complication, in 3 the skin was reported as normal, and in the remainder no details were given. As regards the mental condition, in 29 cases no information was supplied, in many instances the subject being too young for mental examination, in 6 cases the mentality was reported as normal, and in 5 cases, or 13 per cent., it was reported as defective. According to Dr. Gesell, who maintains that hemihypertrophy is not a hereditary character but a morphological anomaly dating back to an early embryonic stage, hemihypertrophy may be interpreted as an atypical or imperfect form of twinning, a variant of the same process which may produce a double-headed monster or a perfectly ordinary normal individual, the latter being an organism in whom there has been a precisely balanced inhibition of the biological process of bilateral doubling. The complication of mental defect is attributed to an abnormality in the process of bilateral twinning which involves a disturbance of normal tissue development.

INTERNATIONAL ASSOCIATION OF HISTORY OF MEDICINE.

A MEETING to form an International Association of the History of Medicine was held in Paris on Oct. 8th, at the Faculty of Medicine, at which representatives from Great Britain, Holland, Belgium, Spain, Portugal, Denmark, Norway, Switzerland, Roumania, France, and other countries were present. The object of this Association is to pursue the study of the history of medicine by means of research, bibliography, and communications presented by its members for discussion at the future meetings of the International Congress. The Association is the outcome of the successful International Congresses, the first of which was held in Antwerp in 1920, and the second in July last in Paris. It was then decided to form a permanent bureau or committee to meet in Paris to draw up a constitution and make regulations to indicate to members various subjects for research and investigation, so as to ensure unity and continuity, and to make their work of practical value. Prof. Jeanselme (Paris) presided and extended a cordial greeting to the foreign representatives. Prof. Laignel-Lavastine, General Secretary of the Faculty of Medicine of Paris, then outlined the proposed constitution. He suggested that the Permanent Committee should consist of a president, vice-presidents, secretary and treasurer, and delegates from each country represented. This proposition was accepted by the meeting, and Dr. Tricot-Royer (Antwerp) was elected president, Dr. C. Singer (Great Britain), Profs. Giordano (Italy), Ménétrier, and Jeanselme (France) were appointed vice-presidents, Dr. Fosseyeux archivist and secretary, and Dr. Boulanger treasurer, of the Permanent Committee of the Bureau.

Dr. Singer conveyed an invitation from the Section of the History of Medicine of the Royal Society of Medicine for the third International Congress to meet in London next year, which was cordially accepted, and the approximate date was fixed for the meeting for July 24th to 29th, 1922. The following subjects were suggested for the consideration of the members at the next Congress: (1) Principal seats of endemic and epidemic diseases in the Classical Orient during the Middle Ages. (2) History of Anatomy. (3) Revival of medical knowledge during the sixteenth century. The draft by-laws of the Association will be submitted to the Permanent Committee of the Bureau at the next meeting, which it is expected will be held in December next.

THE CAMBRIDGE CHAIR OF ANATOMY.

IN an annotation of Oct. 15th upon the innervation of striped muscle we alluded to Dr. J. T. Wilson as Challis Professor of Anatomy in the University of Sydney. This was an error of forgetfulness, for Prof. Wilson has now succeeded the late Prof. Alexander Macalister as professor of anatomy in the University of Cambridge, and began his work there this term. Prof. Wilson's translation from Sydney to Cambridge was due to the fact that the electors considered him the most likely man possible to build up a research anatomical department in the University of Cambridge. During his stay at Sydney he has educated a long line of sound anatomists, notable among these being Prof. Elliot Smith, while he is himself a pupil of that famous teacher of anatomists, Sir William Turner. Under Prof. Wilson the chair of anatomy at Cambridge should bring forth great things.

UNIVERSITY OF SHEFFIELD: UNION OF MEDICAL SCHOOL AND HOSPITAL.

THIS term new regulations come into force whereby an attempt is being made by the University of Sheffield to bring into closer contact the laboratory studies of anatomy and physiology, on the one hand, and the elementary principles of medicine and surgery on the other, and to show the student, whilst still engaged in the former studies, their practical application to the latter. It is hoped to attain this object by making the third or middle year of the curriculum into a kind of dove-tailed joint between laboratory and hospital. In order to bring this about the second M.B. examination in general anatomy and physiology has to be taken at the end of the second year—that is to say, six months earlier than heretofore; whilst a further examination in these subjects, with the addition of pathology and pharmacology, is held in the third M.B. examination at the close of the fourth year. Under this plan it is obviously impossible for the second M.B. examination to cover the whole of the subjects in detail, since the students will have studied them for one year only. The difficulty of the scheme lies in the proper distribution of the teaching of the subjects before and after the second M.B., and the grading of the examinations. At present the scheme is in the experimental stage. The second M.B. examination held last June was the first to be held at an earlier stage in the curriculum, and the results were distinctly encouraging. Possibly the anxiety of the teachers to show good results, and certainly the keenness of the students to make the scheme a success, played some part here. Even those who were inclined to doubt the wisdom of the innovation admitted that the outcome was better than anticipated. As regards the clinical

[1] Archives of Neurology and Psychiatry, October, 1921.

side of the third or transitional year, the students are engaged on this for about one-half of each week. During the hours they spend in the hospitals they are under the immediate supervision of a member of the staff, and either in the casualty rooms or wards or elsewhere they are systematically instructed in the elementary essentials of clinical work. As far as possible the subjects demonstrated clinically are made to correspond with the subjects which are being dealt with during the remainder of the week in the laboratory. No novelty is claimed for the scheme. On the contrary, it is a reversion to the practice of many medical schools a generation ago, as students of those days will remember. Those, however, who remember having to do six months' hospital practice before entering for their examinations in anatomy and physiology will remember also that the hospital practice was then a somewhat perfunctory affair. It was often regarded as an interference with the earlier studies. The student had to get "signed up" for it, and to this extent only it was important, but little or no attempt was made to show that clinical practice had any bearing on the earlier subjects. The present experiment, which has its counterpart elsewhere, will be watched with interest by all those responsible for training students of medicine.

THE ROYAL SOCIETY OF MEDICINE: SOCIAL EVENINGS.

THE Council of the Royal Society of Medicine has decided to resume the Social Evenings, having regard to the general appreciation by the Fellows of the opportunities offered at such gatherings for scientific and social inter-communication. The first meeting has been fixed for Monday, Oct. 31st, when the Fellows and their friends will be received by the President of the Society, Sir John Bland-Sutton, with Lady Bland-Sutton, at 8.30 P.M., after which the President will deliver a short address on "Choroid Plexuses and Psammomas." Those who may recall an address delivered by Sir John Bland-Sutton, at a previous similar gathering, upon "Gizzards and Counterfeit Gizzards," will attend the Social Evening with pleasurable anticipation. The library of the Society will be open to the guests and various objects of interest will be on exhibition, while the lighter side of the reception will be represented by music, refreshments, and smoking. Fellows may invite guests, and tickets are not required.

IN view of the large number of protests received from local authorities in regard to the threatened reduction from 50 to 5 per cent. in the Treasury grant towards the supply of milk to mothers and young children, the more generous scale has been extended by the Ministry of Health until March 31st, 1922.

THE St. Pancras Borough Council has unfortunately maintained its attitude with regard to the dismissal of Dr. Gladys Miall-Smith. By this act a competent officer loses work for which she was not only well fitted but was actually discharging in a satisfactory manner. A question will be put to the Minister of Health on the subject.

AT the Royal College of Physicians of London on Nov. 1st Dr. F. Parkes Weber will deliver the Mitchell Lecture on the Relations of Tuberculosis to General Conditions of the Body and Diseases other than Tuberculosis; on Nov. 3rd Dr. Michael Grabham will deliver the Bradshaw Lecture on Sub-tropical Esculents; and on Nov. 8th and 10th Dr. R. O. Moon will deliver the FitzPatrick Lectures on Hippocrates in Relation to the Philosophy of his Time. The hour in each case is 5 P.M.

The Services.

THE MINISTRY OF PENSIONS: CONCURRENT TREATMENT AND TRAINING.

THE rules governing the admission of disabled ex-officers and nurses to concurrent treatment and training have been revised in the light of recently published decisions of the Ministry of Labour, and it must be remembered that the concurrent treatment and training are normally preliminary to passage under that department. Applications for concurrent treatment and training must reach the Commissioners of Medical Services of the various regions not later than the end of this month. Such applications cannot be entertained later unless the applicant has been demobilised or discharged for more than a year, or can show that, though out of the Services for a longer period, there has been continuous treatment, additional or retired pay or pension, or that unsuccessful endeavour since discharge has been made to resume pre-war occupation or to enter one equally remunerative. These arrangements do not at present apply to tuberculous cases.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Capt. C. L. W. Bunton is placed on the retd. list at own request.

ROYAL ARMY MEDICAL CORPS.

Maj. A. C. H. Gray relinquishes the temp. rank of Lt.-Col.

Capt. L. Buckley retires, receiving a gratuity.

Officers relinquishing their commns.:—Temp. Maj. C. J. Marsh, and retains the rank of Maj. Temp. Capts. retaining the rank of Capt.: G. L. Lawlor, H. H. R. Bayley, I. A. Davidson, H. Gibson, H. E. M. Baylis, C. L. Herklots, and W. St. A. Hubbard.

ARMY DENTAL CORPS.

Temp. Capt. B. E. Gentleman, Dental Surg., from Spec. List, to be Lt., and to be temp. Capt.

Temp. Capt. W. Meeke relinquishes his commn. on ceasing to be empld. as a Dental Surg., and retains the rank of Capt.

SPECIAL RESERVE OF OFFICERS.

Capt. K. N. G. Bailey relinquishes his commn. and retains the rank of Capt.

TERRITORIAL ARMY.

Capt. G. F. Shepherd (late R.A.M.C.) to be Lt., and relinquishes the rank of Capt.

INDIA AND THE INDIAN MEDICAL SERVICE.

The King has approved the retirement of Maj.-Gen. P. Carr-White, and the resignation of Capt. G. B. Harland.

Maj. R. H. Lee has been appointed to hold visiting charge of the office of Agency Surgeon, Eastern Rajputana States. Majs. H. W. Pierpoint, D. Heron, J. Husband, and A. N. Dickson have been confirmed in their appointment as Agency Surgeons. Lt.-Col. W. D. H. Stevenson, Assistant Director-General, has proceeded on a year's leave, and Maj. J. A. Cruickshank, of the Bacteriological Department, has been posted to Madras and appointed Assistant Director, King Institute, Guindy.

DEATHS IN THE SERVICES.

Surg.-Gen. Sir WILLIAM DEANE WILSON, K.C.M.G., R.A.M.C., who died at his residence at Westfield in Sussex on Oct. 19th, aged 77, saw service in the Afghan War of 1878–80, and in the Egyptian Campaign of 1882–84, being mentioned in despatches and receiving medals and clasps on both occasions. In 1898 he was Principal Medical Officer for the Western District at Devonport, and was created K.C.M.G. in 1900.

News has reached this country of the conditions under which Lt.-Col. E. A. ROBERTS, D.S.O., Third Surgeon of the General Hospital, Madras, was drowned on the Madras beach last month. The deceased went with a friend to bathe, and going out of his depth called for help. The friend reached him with great difficulty, and succeeded in bringing him to shore, where he rendered all possible aid, but without avail. An inquest was held, and the jury returned a verdict that death was due to accident.

DONATIONS AND BEQUESTS.—The late Mr. Wm. Mitchell, sometime millwright at Stuartfield, and latterly residing at Hawthorn Cottage, Station-road, Mintlaw, has left, free of legacy duty, £100 to the Aberdeen Royal Infirmary, and £100 to the Aberdeen Sick Children's Hospital.—The Chelsea Hospital for Women has received a grant of £150 from the Alexandra Day Fund.

THE PANEL CONFERENCE.

THE annual conference of representatives of local medical and panel committees was held in London on Thursday, Oct. 20th, and transacted its business in the course of a single strenuous day. Dr. H. G. Dain, of Birmingham, occupied the chair, being supported by Dr. H. B. Brackenbury (chairman) and other members of the Insurance Acts Committee (hereafter briefly called I.A.C.).

An Independent Executive.

After formal business a motion by Kent was taken urging that the views of panel committees should be focussed by a central statutory committee elected solely by panel committees. This gave the Conference the opportunity of passing, with 17 dissentients, a vote of confidence in the I.A.C. as its central negotiating body and of deprecating the formation of any new negotiating body as contrary to the interests of the medical profession as a whole. London withdrew a similar motion in view of the obvious need to support the I.A.C. at the present serious juncture.

Rate of Remuneration.

Dr. Brackenbury, on behalf of the I.A.C., moved a series of recommendations dealing with the rate of remuneration, which were accepted with practical unanimity in the following form :—

This Conference reaffirms the opinion that 13*s*. 6*d*. is the lowest capitation fee that should be offered for an effective service, and asserts that there is no justification whatever for a *demand* that the arbitration award of 11*s*. should be lowered.

This Conference recognises the force of the "appeal to citizenship" made by the Minister of Health to insurance practitioners "to make some sacrifice for the common good in a great financial crisis"; is willing to urge practitioners to respond to this patriotic appeal to any reasonable extent consistent with the interest of the public health; and asks the Government to discuss with representatives of the profession the best means of carrying this into effect.

This Conference authorises the I.A.C. to consider with the Government (*a*) a rebate of 1*s*. on the present capitation fee; (*b*) any other relevant financial questions except that of mileage; (*c*) the date at which the new arrangements should come into effect; (*d*) the duration of such arrangement; and agrees to support any arrangement that may be arrived at.

That the measure of success which has attended the experiment of providing medical benefit under the National Health Insurance Acts system has been sufficient to justify the profession in uniting to ensure the continuance and improvement of this system.

This Conference, though of opinion that the Insurance Acts should be allowed to work during a number of normal years with such incidental improvements only as experience proves necessary, before any reliable conclusions can be drawn as to their effect on public health, would willingly take part in any wide inquiry into the working of those Acts that may be thought desirable, but suggests that any inquiry concerned with medical benefit should not be entered upon until April, 1922, at the earliest, that being the date at which the new regulations will have been two complete years in operation.

That the I.A.C. be authorised to take immediate steps to see that the profession is so organised as to take any such united action as may be found necessary.

In moving these recommendations, Dr. Brackenbury said that it was not the first time that a patriotic appeal had been made by the Minister of Health to the medical profession which had already made sacrifices greater than those of any other section of the community. Other contract practice might also suffer concurrently with any lowering of the capitation fee, and the prevalent unemployment caused medical men to suffer also in other capacities. The decision was not for the medical profession alone to make, for medical benefit had become deeply rooted in the social system of the country.

These recommendations were submitted to Sir Alfred Mond during a recess in the Conference by a deputation including the I.A.C. and three members nominated directly by the Conference—viz., Dr. H. J. Cardale (London), Dr. J. A. Macdonald (Taunton), and Dr. D. F. Todd (Sunderland). The reply of the Minister was to the effect that he could not alter the suggested reduction of the capitation fee to 9*s*. 6*d*.—he had indeed been pressed to make it 8*s*.—but that he was prepared to guarantee its maintenance for two years and to discuss the date from which the reduction should become operative and the possibility of regarding it as a rebate and not a reduction of the basic fee.

After discussion the Conference agreed, with 13 dissentients, to instruct the I.A.C. to accept the Minister's offer "on grounds of citizenship."

Records.

The Conference, after accepting the recommendation of the I.A.C. that the *form* of record should remain as at present, with certain trifling verbal alterations, decided warmly that the obligation to enter on it the dates of all consultations and visits was irksome and unnecessary. Should this obligation be withdrawn, no exception would be taken to entering the date of initial attendance and the dates of issuing first and final certificates of incapacity, along with an appropriate clinical note. The proposal by Yorkshire W.R. of a single daily record card to last for a whole year, and to show the massed total of all services rendered during that period, met with a sympathetic reception. Apart from obligation it was admitted that the present form of record afforded practitioners desirous of making clinical notes a convenient means for so doing. The need for prompt transmission of records on request was again impressed on practitioners by their representatives.

Transfer of Practices.

It was agreed by overwhelming majority to press again for the withdrawal of the present regulations affecting the transfer of practices on death or retirement of the practitioner, and to do so on the lines indicated in the I.A.C.'s report. The right of an insured person to take this opportunity of making a fresh choice is freely admitted as well as the justice of making him aware of his right. But the I.A.C. contends that it is quite consistent with this right that insured persons who have not made a new choice within a reasonable period should be transferred to the successor's list as from the date of decease or retirement. The proposal is that on the decease or retirement of a practitioner the insured persons on his list would, as now, be informed of their freedom to make a fresh choice and of the willingness of the successor to the practice to accept them. A month before the first day of the next quarter but one, those who had not exercised their right would be further informed that unless they did so within a month they would be assigned to the successor. The patient, if for any reason dissatisfied, would thereafter be able to effect a change by giving notice to his insurance committee, the I.A.C. being prepared to agree to a simplified method of transfer, either at the quarter or forthwith by sanction of the allocation subcommittee. On this matter the Conference was evidently as united as on that of remuneration.

Defence Trust.

A report from the trustees of the National Insurance Defence Trust was received and approved. That fund had now been subscribed to by 101 out of a total of 197 panel committees, while 33 other committees had promised their support. A sum of £1300 had been received or promised during the year, bringing the fund up to a total of about £24,000. At the Conference itself, a considerable number of committees who had not so far supported the Trust expressed, through their delegates, willingness to do so. Dr. Brackenbury reported that it had already proved possible to make grants to certain panel practitioners who had suffered from their adherence to resolutions passed at a previous conference.

Disciplinary Procedure.

The I.A.C. was authorised to press for the play of public opinion on the disciplinary procedure in alleged breaches of agreement by a panel practitioner. In cases of removal from the panel the inquiry was in practice a public inquiry, though there was no provision that it must be public. In most cases, however, involving the infliction of a fine on the practitioner by withholding the Treasury grant, the inquiry was conducted in private by one or more officers of the Ministry without prescribed rules of procedure. If the practitioner desired to make oral representations he must do so in person, though in practice he was allowed to be accompanied by a representative of a medical defence society or by a solicitor. Cases had occurred in which it seemed to panel or to insurance committees that the fine inflicted has been disproportionate to the neglect or offence which occasioned it. The I.A.C. therefore thought it desirable for the sake of everyone concerned that public opinion should in some way have an opportunity of being informed and satisfied in these cases. The Conference took this view and authorised the I.A.C. to enter into negotiations with the Ministry, so that representatives of panel committees or other recognised professional bodies might be present at the inquiry, or so that the facts of the case as known to the Ministry and the fine proposed to be inflicted, should be submitted to the panel committee for its observations before the penalty became operative.

Inflated Index Registers.

The I.A.C. was instructed to bring before the Ministry the lax and dilatory manner in which some approved societies carried out the requirements of the Ministry in respect of such of their members as had ceased to be insured. A delegate gave as an instance the fact that he still had on his list the name of a boy who died in 1915.

Coöperation with Unqualified Practitioners.

Herefordshire asked the I.A.C. to take such action as would relieve panel practitioners of their obligation to supply certificates and treatment to insured persons who were being treated by bone-setters or other unqualified practitioners. It was pointed out that no such obligation in fact existed and that the practitioner was advised to cease attendance and make immediate application for the removal of the name from his list. The full support of the B.M.A. was offered to any practitioner who was obliged to fight such a case on behalf of the medical profession.

Regional Medical Officers.

A motion to abolish the office of regional medical officer in the interests of economy was ruled out of order by the chairman, who pointed out that the I.A.C. approved of the appointment of these officers and had indeed been partly responsible for the initiation of the policy.

Superannuation.

The last motion to be taken was by London to the effect that provision for the superannuation of practitioners working under the National Insurance Acts should be included in the terms of service, and that in any negotiation as to remuneration such provision should be taken into account. Dr. Cardale reminded the Conference that a practicable scheme was submitted two years ago and that its small initial cost would be likely to weigh with the Ministry of Health if asked to consider it. The chairman suggested that a matter of such importance could not be adequately dealt with at so late an hour, and it was left to the London representative to bring the matter before the I.A.C.

After passing by acclamation votes of thanks to Dr. Dain, chairman of the Conference, and Dr. Brackenbury, chairman of the Insurance Acts Committee, the Conference rose at 10.30 P.M.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

International Congress of Ophthalmologists at Vienna.

THE Ophthalmological Society of Vienna recently arranged an international congress in honour of the veteran Prof. Ernst Fuchs, inviting the attendance of all members of ophthalmological societies throughout the world. The significance of the meeting lay in the fact that it was the first really international scientific congress held since the outbreak of war. Not only neutral countries, but also former enemies—the U.S.A., Japan, Latin America, and Italy—were represented by their leading oculists. Only Great Britain, France, and Belgium sent no delegates. The meetings were held from August 3rd to 6th; 43 papers were read, and 20 demonstrations given in the eye clinics of the University of Vienna. The high standard of the work submitted was made evident by the large attendance of delegates at every session. Adherents of the old classic ophthalmology and investigators of more modern tendencies were equally energetic in pressing their claims to attention. The transactions were preceded by an address by Prof. Fuchs; and the hundredth anniversary of the birth of Helmholtz was the occasion of an eloquent speech by Prof. Friedrich Dimmer. Prof. M. Marquez de Rodriguez (Spain), D. Gourfein (Switzerland), and others; Maggiore (Italy) and Hagen (Norway) also took part in the opening ceremony. Amongst the interesting contributions to the congress may be mentioned a paper on glaucoma, presented by several German ophthalmologists, in which it was shown that Graefe's classic method of iridectomy still held its own as the best means of combating this condition. Nevertheless, modern research had shown that whilst treatment with instillations of pilocarpine alone had little effect, marked improvement resulted when pilocarpine was combined with the internal use of thyroid extract. Dr. Ernst Hertel (Leipsic) reported excellent results from this treatment. Suction seems of late years to have assumed importance. Prof. J. A. Barraquer y Roviralta (Barcelona) has applied it for extraction of cataracts by means of a small suction-pump driven by electricity; Dr. Zur Nedden (Dusseldorf) has used the same means to remove the corpus vitreum in cases of fresh infected injuries and of hæmorrhage of corpus vitreum and retina, or acute inflammations. A modification of the old methods of removing iron particles from the bulbus by means of a magnet was demonstrated by Dr. Gilbert (Munich), who, by the introduction of a very strong magnet into the interior of the bulbus, has removed particles even from the retinal layers Experimental syphilis of the eye of rabbits was described by Dr. Iggersheim (Göttingen), who contended that the posterior strata of the cornea and the fibrinous deposits on the posterior aspect of the cornea harbour nearly all the spirochætes living in the eye. Accordingly he injected a new soluble preparation of salvarsan into the anterior chamber of the eye, with excellent results. Amongst other papers of interest was that by Drs. Koppanyi and Kolmer on the transplantation of the eyes of rats. These two authors claimed to have obtained successful function in transplanted eyes. The experiments were conducted in the Biological Department of the Academy of Science at Vienna, and the conclusions were received with reserve, but caused sensation. A paper on X ray treatment of tumours of the hypophysis was presented by Prof. Müller (Vienna) and Dr. Czepa, who had obtained good results without recourse to operation. Other cases where the hypophysis was attacked through the nasal route (method of Hirsch), were afterwards subjected to radium treatment, with equally satisfactory effect. In all cases the most welcome effect was the cessation of the characteristic violent headaches after one application. Acromegalic symptoms also yielded readily to this treatment. Of course, not all cases

are amenable to this therapy. Combination with small doses of iodine was found very beneficial, especially in the restoration of sight.

The New Institutes of Neurology and History of Medicine.

In spite of the difficult economic situation, two new institutes have lately been added to the large number of special departments of medical study in Vienna. In 1882 Prof. Heinrich Obersteiner began an agitation for accommodation for the study of neurology and of the morbid histology of the brain. It took him 23 years to obtain a few rooms and a small annual grant from the Government. Just before the outbreak of war a special building was at last allotted to his department, but the internal furnishing was only very recently completed. The institute contains spacious work-rooms, a class-room seating 100 pupils, a chemical laboratory, an aseptic theatre for animal operations, and housing for the animals, birds, and fishes used for experimental purposes. The library compiled by Prof. Obersteiner contains more than 50,000 volumes, and the department possesses one of the finest microtomes in the world, a gift from the Rockefeller Institute, but the unrivalled collection of microscopic specimens of the normal brain and cord is the proudest boast of the new institute. Many glass utensils, chemicals, &c., are still, however, lacking; the yearly Government grant is 1500 kronen, now worth about five shillings.

The Institute of History of Medicine owes its development to the persistence of Prof. Max Neuburger, who has striven for its foundation for 15 years. This institute is now housed in the former military surgical academy. The medical museum in this building illustrates the development of the Vienna Medical School during the past 150 years, and contains amongst other objects a unique collection of surgical instruments, given to the Medical Faculty of Vienna by the Emperor Joseph II. in 1785. The first stethoscope constructed by Laennec, the first ophthalmoscope of Helmholtz, and numerous letters, pictures, and documents pertaining to the old Vienna schools of medicine, are amongst the objects of historic interest in this museum.

Oct. 7th.

CZECHO-SLOVAKIA.

(FROM OUR OWN CORRESPONDENT.)

A Temperance Measure.

Deputy Holitcher has introduced a Bill into Parliament by which the sale of alcoholic drinks to persons under 18 years will be prohibited in bars and saloons. Every saloon keeper will be compelled to ask for documentary evidence if he suspects his customer to be within this age limit. The Bill has the support of all the Socialist parties, but there is strong opposition to it from the interests which stand behind the large brewing companies. The measure may be considered as the first results of the efforts of the Czecho-Slovak Temperance Union; the present time is particularly favourable for its introduction, as high war prices have greatly reduced the consumption of alcoholic liquor.

Tuberculosis Survey.

Dr. Jaroslav Hulka has just completed, under the auspices of the Ministry of Health, an extensive tuberculosis survey of Czecho-Slovakia. The survey contains figures which throw much light on the hitherto unknown situation of the country with regard to tuberculosis. It appears that out of a population of 13½ millions, about 48,000 people die of tuberculosis every year in the Republic. The tuberculosis death-rate per 100,000 for 1919 was 278 (all forms). The death-rate began to decline in the year 1886 and since then has fallen 38·3 per cent. Czecho-Slovakia occupies the fifth place in the series of States with a high tuberculosis mortality, being surpassed by Hungary, Serbia, Finland, and France. Thirty-five per cent. of the deaths in the working ages—i.e., 20–60—are caused by some form of the disease. This figure compares very unfavourably with the 16 per cent. rate in England. During the war the tuberculosis death-rate had risen 25 per cent. by 1916, remained at the same level during 1917, and reached its peak in 1918, the influenza year, showing an increase of 37 per cent. on the 1913 figures. Since then it has fallen rapidly. There are 58 public dispensaries in Czecho-Slovakia and 11 others privately owned by physicians; there are also 18 preventoria and sanatoria for children, 19 sanatoria for adults (3 of them military), and 11 tuberculosis hospitals. The total beds in all these institutions approximate 3500. The survey will be published by the Ministry of Health with an English summary.

Venereal Diseases Course.

The Section of Social Diseases in the Ministry of Public Health and Physical Education has organised a Venereal Diseases Course at the University of Prague. The course will consist of 50 lectures given by physicians sociologists, teachers, and lawyers. The number of persons attending has been limited, and the list has been closed for some time. The education of children in sex matters will be especially emphasised. The course has aroused so much interest that it will be repeated in December.

Oct. 14th.

Obituary.

EDWARD OWEN DALY, M.A., M.D. OXON., M.R.C.P. LOND.

Dr. E. O. Daly, who died at his residence in Hull on Oct. 18th at the age of 66, was the elder son of Dr. Owen Daly, honorary consulting physician to the Hull Royal Infirmary. He was educated at Cheltenham, University College, Oxford, and studied medicine at St. George's Hospital, where he afterwards acted as house physician and as assistant medical registrar. He qualified L.S.A. in 1880, and subsequently graduated M.A., M.D. Oxon., becoming also M.R.C.P. in 1884. In 1885, shortly after starting practice in Hull, he was elected honorary physician to the Hull Royal Infirmary. Later he became a consulting physician to that institution and to the Grimsby District Hospital, being also physician to the Hull and East Riding Convalescent Home and other institutions. In 1890 he was President of the East Yorkshire and North Lincolnshire Branch of the British Medical Association, a post which his father had held on two previous occasions. In 1902 he was President of the Hull Medical Society, and always gave of his best to both the Society and the Association. He contributed several articles to neurological journals, and had a profound knowledge of medical literature; his professional opinion was much sought after over a wide area. In questions of the day he was always interested, although he had no strongly marked political bias. In 1882 he married a daughter of the late Vice-Admiral E. P. B. von Donop. His married life was extremely happy, but a little more than two years ago he was severely shaken by a family bereavement, and of late his failing health was evident to his friends. The number of medical men who attended his funeral in Rowley churchyard bore witness to the respect in which Dr. Daly was held by members of his own profession. He is survived by his widow and two sons, both of whom have attained the rank of major in H.M. Regular Army.

ROYAL PORTSMOUTH HOSPITAL.—The sum of £10,000 has been allocated to the Portsmouth Hospital from the local War Memorial Fund. The unveiling by the Mayor of the memorial stone in the new gateway, which forms part of the scheme, took place on Oct. 19th, in the presence of a large gathering. Extensive improvements to the hospital buildings are in progress.

Public Health Services.

SCARLET FEVER AND DIPHTHERIA IN LONDON.

REPLYING last week to a question in the London County Council, the chairman of the Public Health Committee stated that the number of cases of scarlet fever notified in London had recently increased, as was usually the case at this time of the year. The cases notified in the first and second weeks of October were 1155 and 1136 respectively. The disease was of a mild type. In the case of diphtheria, the corresponding figures were 389 and 417. The usual autumnal increase generally ceased later than in the case of scarlet fever and it was not surprising that the notifications were still increasing. Sufficient accommodation had been found for London cases by using beds earmarked for other infectious diseases not at present prevalent. Captain Warburg added that, notwithstanding the high prevalence of diphtheria and scarlet fever, and the resulting increase in deaths from these causes, the deaths from all causes during the first three-quarters of this year showed a mortality below anything hitherto recorded in London.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

CHESTERFIELD RURAL DISTRICT.

THE estimated population for 1920 was 74,148. Dr. Herbert Peck states that at the last census 55 per cent. of the occupied males were employed in coal-mining and quarrying, 11 per cent. in iron and allied trades, and 8 per cent. in agriculture. The birth-rate in 1920 was 32·47, and in the previous quinquennium 25·8. The death-rate during 1920 was 12·08 and the infant mortality rate 92·6, which latter, Dr. Peck remarks, cannot be considered satisfactory. The death-rate from tuberculosis was comparatively low, as one is accustomed to expect in a coal-mining district—viz., 0·63 in 1920 and 0·98 during the previous 10 years. Dr. Peck says: "The conversion of privies to water-closets is the greatest sanitary need of the district," but further reservoirs are needed before the conversion of the privies can be undertaken on the scale required. Dr. Peck expects the infant mortality rate to remain high until the abolition of the privy-midden system. He also thinks that some better system of disposal of refuse than tipping should be found. Successful vaccinations, which in 1907 numbered 58·9 per cent. of the births, have decreased year by year, and in 1920 they only numbered 12·9 per cent. of the births. There are 11 health visitors and 11 welfare centres, but, Dr. Peck believes, the poorer mothers, who would benefit most by bringing their babies to the centres, keep away on account of inability to provide good clothing for their babies and themselves. Out of 11 notified cases of ophthalmia neonatorum two of the infants were left partly blind; one was still under treatment; the remainder completely recovered. "The shortage of houses was estimated by the Minister of Health at 1649 at the end of 1919."

HULL.

Dr. J. Wright Mason tells us that the birth-rate, 29·1, and the death-rate, 13·2, are calculated on a population of 290,808. Other important statistics for 1920 were: infant mortality rate, 98; death-rate from pulmonary tuberculosis, 0·89; and from other tuberculous diseases, 0·34. Dr. Mason says that with the exception of diarrhœa, the mortality from infectious diseases was somewhat low. We note that for diarrhœa and enteritis under 2 years per 1000 births, Hull had the highest death-rate among the 20 large towns. There is a very complete maternity and child welfare scheme, including a maternity home, in which 236 confinements took place in 1920. The corporation have decided not to take over the two creches which are still at work in Hull. A third creche was closed during the year.

Dr. James A. Raeburn, the tuberculosis officer, gives particulars as to the work of the dispensary and allied institutions. He mentions that a large proportion of tuberculous patients give "dock labourer" as their occupation, and attributes this to the irregular work and pay, and to the fact that the less skilled and educated, who are not particular about their housing accommodation, drift into this work. Dr. Raeburn also thinks that unhealthy living conditions below deck account for the fact that so many sea-faring men and fishermen on trawlers become tuberculous. These speculations would be more interesting if it were possible to obtain the data from which to calculate the death-rate for these occupations. We should also like to see an analysis of the Hull tuberculosis rate for males, females, and children, as, judging from the nature of the men's occupations, the male phthisis rate in Hull ought to be lower than in most towns. The V.D. report shows that there were 1336 new patients suffering from venereal diseases, and that during the year 619 patients gave up attendance before completing a course of treatment or before a final test as to cure. Attendance is, of course, more likely to be interrupted in a seaport clinic than in an inland one. Dr. Mason has had the card advertising free treatment at the clinic translated into eight languages for the benefit of the foreign seamen coming to the port. 371 observations were taken of chimneys for black smoke, but "in no case has it been necessary to serve a statutory notice." We hope that the non-service of notices was due to the prompt action of the owners of chimneys rather than to the leniency of the local authority, but we should like some details as to what is considered an excessive emission of black smoke in Hull. We note that there are 37,966 water-closets and 41,316 privies in Hull, and that a privy conversion scheme is in hand. Last year 58 conversions took place. At this rate of progress the scheme will last long.

HERTFORDSHIRE.

Dr. H. Hyslop Thomson mentions with satisfaction that the death-rate for the county, which was 11·38 in 1919, has fallen to 9·92 in 1920, while the birth-rate has gone up from 14·69 to 22·3. The infant mortality rate was 49·5 in 1919 and 48·46 in 1920. There have been slight falls in the death-rates from pulmonary tuberculosis and epidemic diarrhœa, but a further increase in the death-rate from cancer. The Registrar-General estimates the population at 325,962 for birth-rate and at 325,684 for death-rate. The general death-rate was 9·66 in the urban districts, and 10·55 in the rural districts, while the infant mortality rate was 49·39 in the urban districts compared with 46·35 in the rural. Dr. Thomson complains that there are three large dumps for London refuse in the county. He says: "It is remarkable that one public health authority should have power to deposit such large quantities of refuse on ground within the jurisdiction of another public health authority without its knowledge or approval, or without being subjected to certain conditions," and asks: "Is it a mere coincidence that during 1920 the highest death-rate from infantile diarrhœa in the rural districts was in the district where two large refuse dumps are situated?" For V.D. purposes Hertfordshire is included in the London treatment scheme. During the year Kingsmead School was opened as a special school for mentally defective children, and has already proved its value. To quote Dr. Thomson: "Success, however, depends on the grade of defect and the age at which the child is admitted to the school. If taken early many of these defective children will become good manual workers in the future."

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL.—The Entrance Scholarship in Anatomy and Physiology has been divided equally between C. E. Newman, B.A., of Magdalene College, Cambridge, and P. B. Wilkinson, of King's College, London.

Correspondence.

"Audi alteram partem."

THE ROLL OF THE FELLOWS OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

To the Editor of THE LANCET.

SIR,—May I ask you to give publicity in your columns to the enclosed list of some 250 names of Fellows of the Royal College of Surgeons of England, whose biographies are at present very scanty, if not wholly lacking? It is reasonable to hope that descendants, relatives, or friends of these gentlemen are living who would be able to give information as to them, so that they may be worthily included in the Roll, which at present numbers over 2400 biographies, or references to biographies, of Fellows deceased since 1843. I shall be glad to forward a copy of such facts as I have been able to obtain in the case of any given life to those applying to me by letter at this library.—I am, Sir, yours faithfully,

VICTOR G. PLARR,
Librarian, Royal College of Surgeons of England.
Lincoln's Inn-fields, London, W.C., Oct. 17th, 1921.

ENCLOSURE.

Abbey, John, Fellow (F.) June 28, 1855; practised (p.) Wellingborough; died (d.) ? 1865. Acheson, Johnston Hamilton, Surg. R.N., F. Aug. 26, 1844; d. July 8, 1864. Adolphus, Sir Jacob, F. Dec. 11, 1843; p. at Cheltenham; d. before 1845. Ainger, Major, I.M.S., F. May 11, 1854; d. Feb. 10, 1861. Aldred, George Edward, Asst.-Surg. Indian Army, F. May 12, 1859; d. before 1868. Allen, James, Surg. Bengal Army, F. May 15, 1856; d. Feb. 2, 1892. Allen, William Edward, I.M.S., F. June 9, 1870; d. May 15, 1885. Archer, Edmond, M.D., F. June 14, 1866; latterly of W. Norfolk and Lynn Hosp.; d. Aug. 12, 1869. Atkinson, Henry, F. Aug. 26, 1844; Boulogne; d. before 1882. Atkinson, Robert James, F. Jan. 10, 1861; Calcutta; d. before 1890–91. Attree, William, F. Dec. 11, 1843; Brighton; d. Apr. 24, 1846.

Baddeley, William Edward, F. May 10, 1860; Newport, Salop; d. 1869. Badley, John, F. Dec. 11, 1843; Dudley, Worcester; d. Apr. 16, 1870. Baillie, Herbert, M.D., Surg.-Major, Bengal Army, F. Mar. 4, 1858; d. Dec. 25, 1890. Bally, Wm. Ford, F. Apr. 19, 1854; Bath; d. before 1859. Bancks, Thomas, F. June 14, 1860; Stourbridge; d. before 1880. Banister, George, Surg., Ind. Army; F. Feb. 18, 1860; d. Dec. 6, 1884. Barker, John, F. June 2, 1853; Coleshill, Warwick; d. ? Nov., 1884. Bartlam, Edward Glover, F. June 8, 1871; Broseley, Salop; d. ? 1886. Batt, Frederic Collins, F. Feb. 10, 1853; Abergavenny; d. Dec. 31, 1854. Batten, Thomas, F. Dec. 13, 1866; Coleford, Glouc.; d. 1885. Beale, John Evans, F. Apr. 19, 1854; Plaistow, Essex; 1794–June 26, 1858. Beevor, Charles, F. Dec. 11, 1843; Harley-st.; d. Feb. 8, 1872. Bell, Wm., F. Feb. 12, 1864; Rochester; d. ? 1879. Bennett, Sam. Nevitt, F. Aug. 26, 1844; Chester; d. ? 1844. Berney, Edwd., F. May 15, 1865; Croydon; d. 1889–90. Betts, Hen. Augustus, F. Dec. 9, 1858; Stourbridge, then Galt, Canada, W.; d. before 1871. Bevan, Wm., F. Feb. 10, 1853; Surg., Swansea Infirm.; d. July 15, 1856. Birmingham, George, F. Feb. 10, 1853; Kentish Town; d. ? 1890. Birtwhistle, Richard L., R.N., F. Aug. 26, 1844; d. 1846. Blasson, Thos., F. June 2, 1853; Billingborough, Lincs; d. 1867. Bloxam, Robt., F. Dec. 11, 1843; Newport, I.W.; d. ? 1858. Bolton, Geo. Buckley, F. Dec. 11, 1843; Pall Mall; d. before July 19, 1847. Boultbee, Henry, F. Aug. 26, 1844; Sheffield; d. 1850. Boutflower, Charles, F. Dec. 11, 1843; Liverpool; d. Mar. 28, 1844. Bowden, Stephen, D.I.G., Fleet Surg., F. May 23, 1857; d. Apr. 22, 1896. Boycott, Thos., M.D., F. June 14, 1860; Montagu-sq.; d. May 12, 1886. Bradley, Wm. Henry, Asst.-Surg., H.E.I.C.S., F. Aug. 6, 1857; d. ? 1882. Brigham, Wm., F. Aug. 26, 1844; Manchester and Lymm, Cheshire; d. July 27, 1864. Broughton, Francis, I.M.S., F. May 13, 1857; latterly Ambleside; d. Oct. 14, 1882. Brown, Andrew A., F. Dec. 11, 1843; Paris; d. before May 7, 1852. Brown, Arthur Thomas F., Surg.-Capt., I.M.S., F. June 12, 1890; d. Aug. 29, 1893. Brown, Richard Willson, F. Dec. 11, 1843; d. 1860. Browne, James, M.D., R.N., F. Aug. 26, 1844; d. 1879–80. Browning, Benj. Sen., R.N., F. Aug. 26, 1844; Surg., Parkhurst Prison; d. Mar. 27, 1876. Buchanan, Andrew, F. Feb. 10, 1853; New Zealand; d. ? 1877. Bucknall, Thos. Rupert Hampden, M.D., F. Dec. 14, 1899; Devonshire-st., W.; d. Mar. 18, 1913. Burke, John Page, M.D., Staff-Surg., Malta, F. Mar. 4, 1858; d. ? May 21, 1870. Burleigh, Richard Clarke, F. Aug. 7, 1856; Camden Town; d. ? 1901. Butler, James Henry, D.I.G., F. Apr. 10, 1851; Bengal Army; d. June 2, 1865. Bynoe, Benj., R.N. Staff Surg., F. Aug. 26, 1844; d. Nov. 15, 1865.

Campbell, George Gunning, F. Dec. 11, 1843; Montagu-sq., and India; d. ? May 7, 1858. Cape, Henry, Surg.-Major, Bengal Army, F. Oct. 11, 1860; d. Sept. 27, 1866. Carter, John, Army Surg., F. Aug. 26, 1844; d. ? 1867. Cartwright, Richd., F. Dec. 11, 1843; Bloomsbury-sq.; d. before June 26, 1854. Cary, Walt, M.D., F. Apr. 12, 1855; d. July, 1878. Champney, George, F. Dec. 11, 1843; York; d. ? 1861. Chapman, Henry Wilson, F. June 28, 1855; Palace-st. and Margaret-st., W.; d. May 30, 1875. Chesman, Thos., F. Dec. 24, 1844; Sheffield; d. Nov. 9, 1874. Clark, Edwd., F. Dec. 1, 1854; Toronto; d. before Jan. 21, 1857. Clarke, John, F. Dec. 11, 1843; d. ?. Coates, Henry, F. Dec. 11, 1843; Salisbury; d. in or before Apr., 1848. Cole, George, Army Surg., F. Dec. 1, 1854; d. June 15, 1858. Colebrook, Henry, F. Nov. 14, 1878; d. at Bath, Feb. 25, 1890. Condell, Wm., F. Dec. 9, 1858; Tunbridge Wells; d. May 30, 1863. Couran, John Trebeck, F. Aug. 26, 1844; Madras Med. Estab.; d. Nov., 1851. Cormick, Wm., F. Oct. 19, 1876; Phys. to Crown Prince of Persia; d. Dec. 30, 1877. Cother, Wm., F. Dec. 11, 1843; Gloucester; d. before Sept. 27, 1852, or in 1854. Cottingham, Edwin, F. Oct. 14, 1858; Bexley; d. Nov. 28, 1858. Cousins, Edwd., F. June 13, 1862; Camden-rd., N.W.; d. Sept. 1, 1868. Cox, Charles Lindsey, Surg. Indian Army, F. Feb., 1860; d. May 23, 1886. Craddock, Wm., 70th Indian Native Inf.; F. May 12, 1859; d. ? 1886. Crawford, Henry, F. Aug. 26, 1844; Canterbury; d. ? 1872. Crelling, Fred, R.N., F. Aug. 26, 1844; d. Oct. 1, 1860. Cumming, Robt. Butterfield, M.D., Army Surg.; F. Oct. 11, 1866; p. latterly at Malpas; d. Grahamstown, ? 1890.

Dalton, Henry Gibbs, F. Feb. 12, 1864; Georgetown, Demerara; d. 1875–76. Darby, Wm., Army Surg., H.E.I.C.S.; F. Aug. 26, 1844; d. Mar. 10, 1867. Davis, Wm. Farquhar, Surg.-Major, Madras Army, F. June 13, 1867; d. Feb. 25, 1877. De Liefde, John, F. Dec. 9, 1869; Camden-rd., N.W.; d. 1871–72. Dent, Robt., I.M.S., F. June 2, 1853; d. June 19, 1903. Dollard, Wm., Asst.-Surg., Indian Army, F. Aug. 26, 1844; d. ? 1847. Dunsterville, George Edwd., F. Aug. 13, 1863; Port Elizabeth, Cape; d. before 1890. Dyer, Sam, F. Dec. 11, 1843; Cambridge-terrace, N.W.; d. before Dec. 15, 1845.

Earle, Edwd. Septimus, F. May 31, 1860; New Brentford; d. 1884–85. Edis, Fred. Pooley, Surg., Bengal Army, F. Dec. 10, 1868; d. Oct. 10, 1881. Edwards, John, Surg., R.N., F. Aug. 26, 1844; d. before Aug. 15, 1848. Ellison, King, F. June 2, 1853; Surg., Blue Coat Hosp.; d. Bath, May 6, 1860. Evans, Wm., R.N., F. Oct. 21, 1852; formerly Surg. to Prince Lucien Bonaparte; d. June, 1860.

Farmer, Wm., F. Aug. 10, 1854; Bedford Row; d. 1897–98. Farquhar, Alex., F. Aug. 7, 1856; Turriff; d. ? 1890. Figgins, Henry, F. Oct. 15, 1874; Birmingham; d. Nov. 4, 1881. Findlay, John, R.N., F. Aug. 6, 1857; d. ? 1890. Fletcher, John Wm., Surg., I.M.S., F. Dec. 16, 1847; d. Dec. 2, 1860. Folds, Wm., F. Aug. 26, 1844; Hon. Surg. Queen Victoria; d. 1869. Ford, Charles Geo. Edwin, Surg., Army of H.E.I.C., F. Mar. 10, 1859; d. before Dec. 5, 1864. Franklin, Richd., F. Aug. 26, 1844; Limerick; d. ? 1848. Fuge, John Hele, F. Aug. 26, 1844; Plymouth; d. Oct. 7, 1871. Furness, Thos. Albason, F. July 25, 1854; Newcastle; d. May 18, 1857.

Garden, Alex., F. Aug. 26, 1844; Bengal Med. Estab., H.E.I.C.S.; d. before June 23, 1845. Gilson, Benj., F. Aug. 26, 1844; Halstead, Sussex; d. May 28, 1856. Glover, Jos. Tuthill, M.D., F. May 9, 1861; Bengal; d. 1874–75. Goldney, Harry, R.N., F. Aug. 26, 1844; d. at sea, Aug. or Sept., 1849. Goldstone, Robt., F. Aug. 26, 1844; Bishopstoke; d. before June 25, 1858. Goodall, Abraham, I.M.S., F. Oct. 11, 1860; d. Jan. 21, 1892. Grosjean, Jas. Keith Jeanneret, F. Dec. 12, 1867; Kensington and Alexandria; d. ? 1886. Gruggen, Wm., F. Aug. 26, 1844; Chichester; d. 1868. Gunn, Theophilus Miller, F. Dec. 9, 1858; York-place, Portman-sq.; d. ?.

Hale, Fred, F. Mar. 11, 1857; d. Guernsey, Sept. 14, 1863. Halls, John Jas., Asst.-Surg., Bengal Army, F. Apr. 11, 1850; d. at sea; Nov. 6, 1860. Hancorn, Robt., F. Mar. 10, 1859; Swansea; d. ? 1891. Hargraves, Isaac, F. Feb. 10, 1853; Tunbridge Wells; d. Aug. 16, 1856. Harrison, George, F. June 28, 1855; d. Grosvenor-st., Apr. 12, 1866. Harrison, James, I.M.S. (Bengal), F. Jan. 10, 1861; d. Oct. 16, 1862. Hastings, Thos., Surg.-Gen., I.M.S., F. July 9, 1857; d. Jan. 27, 1897. Heath, Hen., F. Dec. 11, 1843; Newcastle-on-Tyne; d. Dec. 6, 1855. Heward, Sir Simon, F. Dec. 11, 1843; Madras Med. Board; d. Apr. 14, 1846. Hill, Wm., F. Aug. 26, 1844; Wootten-under-Edge; d. ? 1846. Hilliard, John, Surg., Bengal Army; F. Feb. 10, 1853; d. ? 1886. Hobbs, Wm., Surg., R.N., F. Apr. 12, 1860; d. Feb. 4, 1884. Hopps, John, F. Dec. 11, 1843; York; d. before June 27, 1853. Hough, Henry, F. Aug. 26, 1844; I.M.S. (Bengal); d. 1881–82.

Ince, John, M.D., F. Jan. 12, 1854; Royal Pimlico Disp.; d. June 21, 1867. Irving, Wm., F. Dec. 9, 1852; Penrith; d. May 21, 1870.

Jackson, Edwd., F. Apr. 17, 1845; Chaddesley-Corbett; d. ? 1890. Johnson, John, F. Dec. 11, 1879; Melbourne; d. ? 1900. Jukes, Alfred, F. Dec. 11, 1843; Birmingham; d. before July 28, 1847.

Keate, Henry, F. Dec. 8, 1870; Shrewsbury; d. 1874. Kelly, Wm., Surg., R.N., F. Aug. 26, 1844; d. Dublin, Mar. 29, 1862. Kelsall, Henry, M.D., Surg., R.N., F. Aug. 26, 1844; d. Dec. 3, 1874. Kemball, Vero Clarke, F., Dec. 11, 1843; Med. Board, Bombay; d. Oct. 20, 1853. Kenny, Bernard, M.D., F. July 25, 1854; d. Hong-Kong, Nov. 2, 1859. Kent, Wm., Surg., R.N., F. Aug. 26, 1844; d. before Oct. 11, 1862. Kinsey, Robt. Bancroft, D.I.G., F. Oct. 8, 1857; Dinapore; d. Apr. 1, 1865. Knight, Chas., F. Feb. 11, 1869; Wellington, N.Z.; d. 1894–95. Knox, Geo., F. Aug. 26, 1844; Madras Med. Estab., H.E.I.C.S.; d. before July 18, 1849.

Lane, Thos. Moore, F. Aug. 26, 1844; Madras Med. Estab., H.E.I.C.S.; d. 1844–45. Larkins, Thos. Brooks, Staff Surg., Bombay Army, H.E.I.C.S., F. Apr. 11, 1849; d. before Jan. 3, 1883. Lay, Peter Goodal, Surg.-Major, Bengal Army, F. July 9, 1857; d. Cairo, Nov. 21, 1892. Leather, Peter Wm., F. Nov. 18, 1858; Liverpool; d. ? 1900-01. Lees, Thos., F. Oct. 14, 1858; Southport. d. May 26, 1861 Leese, Lewis, Sen., F. Aug. 26, 1844; Norwood; d. before Jan. 17, 1848. Le Grand, Fred. Wm., M.D., Surg., R.N., F. Aug. 26, 1844; d. Nov. 4, 1874. Leyson, Wm., Surg., R.N., F. Aug. 26, 1844; d. Nov. 3, 1854. Lindop, Wm., F. Oct. 16, 1856; Newport, Salop; d. ? before 1875. Linton, Robt. Pilkington, Surg., I.M.S., F. Apr. 13, 1868; d. 1875–76. Loney, Wm., Surg., R.N., I.G., F. Nov. 18, 1858; d. 1898. Ludlow, Sam, Mem.

Bengal Board, F. Dec. 11, 1843; d. Bath, Oct. 17, 1853. Lunn, Wm., F. Aug. 26, 1844; Hull; d. 1866–67.

McDermott, Wm., Surg., R.N., F. Mar. 11, 1857; d. Dublin, Sept. 11, 1861. MacDonnell, Geo. Bean, F. Aug. 26, 1844; Madras Med. Estab., H.E.I.C.S.; d. ? Nov., 1851. MacDougal, Alex. Mason, F. Dec. 14, 1865; Shanghai; d. May 6, 1888. Machen, John, F. May 13, 1858; Leamington; d. Nov. 25, 1890. Macpherson, Hugh Martin, M.A., I.G., F. Aug. 8, 1867; Bengal Army; d. Apr. 4, 1902. Magrath, Andrew Nicholson, Madras Army, H.E.I.C.S., F. Feb. 10, 1853; d. 1860–61. Maitland, Gilbert Geo. Wm., I.M.S. (Bombay), D.I.G., F. Feb. 9, 1865; d. at Bath, June 30, 1900. Mann, Geo. Smyth, I.M.S., F. Mar. 10, 1859; d. 1885–86. Marley, Miles, M.D., F. Aug. 12, 1852; Cork-st., W.; d. Nov. 15, 1854. Marshall, John, Surg.-Gen., Bengal Med. Estab., H.E.I.C.S., F. Aug. 26, 1844; d. ? 1860. Matthews, Thos. Leman, Surg., Madras Army, H.E.I.C.S., F. Aug. 12, 1852; d. July 23, 1861. Maurice, David Pierce, F. July 6, 1852; Marlboro'; d. 1879–80. Mawdsley, John, F. Dec. 11, 1843; Hanover-sq.; d. 1869–70. Mayer, John Emilius, I.G. Indian Army, F. Nov. 3, 1870; d. Dec. 3, 1897. Melles, Jas., Bengal Med. Estab., H.E.I.C.S., F. Aug. 26, 1844; d. Mar. 17, 1846. Mitchelson, Wm., Bengal Med. Estab., H.E.I.C.S., F. Aug. 26, 1844; d. 1885–86. Moore, David, F. Aug. 26, 1844; Belfast; d. ? 1849. Morrill, John F. Apr. 13, 1866; p. ? abroad; d. in or before 1890. Morris, Harvey, Surg., R.N., F. Aug. 26, 1844; d. New Cross, Oct. 4, 1860. Morton, David Thos., Surg., Madras Army, H.E.I.C.S., F. Nov. 13, 1862; d. 1885–86. Moyle, John Grenfell, F. Dec. 11, 1843; Prest. Bombay Med. Board; d. Jan. 3, 1860. Muscroft, Jas., F. Aug. 26, 1844; Pontefract; d. in or before 1882.

Nash, Jas. Geo., F. May 13, 1857; Prest. Med. Board, S. Australia; d. Nov. 12, 1879. Naulty, John, Surg., R.N., F. Aug. 26, 1844; d. before July 28, 1846. Nedham, John, F. Dec. 11, 1843; Leicester; d. 1856. Nichols, Jas., F. Aug. 12, 1852; Savile-row, W.; d. Jan. 2, 1870. Nutt, Richd. Clarke, Fleet-Surg., R.N., F. Aug. 26, 1844; d. Oct. 4, 1894.

Ogilvy, Alex., F. Dec. 11, 1843; Montague-sq.; d. ? Dec., 1846; b. 1769.

Palmer, Edwd., M.B., F. Aug. 16, 1849; Sec. Paris Med. Soc.; d. 1860. Parkin, Henry, I.G., F. Dec. 11, 1843; Woolwich; d. Mar. 24, 1849. Parrot, John, F. Dec. 9, 1852; Clapham Common; d. Nov. 10, 1860. Penny, Henry Jas., D.I.G., Surg., Madras Army, H.E.I.C.S., F. May 1, 1856; d. Taunton, Dec. 22, 1901. Perkins, Houghton, F. Oct. 21, 1852; Mortimer-st., W.; d. Nov. 25, 1890. Peterkin, Jas., I.M.S., F. Aug. 13, 1863; d. Mar. 21, 1888. Phillips, Jas., F. Aug. 12, 1852; Bethnal Green; d. Nov. 27, 1857. Pitman, Henry, D.I.G., F. Feb. 9, 1865; d. Wyborne, Sept. 1, 1882. Potter, Henry Glasford, F. June 2, 1853; d. at Reform Club, June 3, 1868. Price, Jas., F. Oct. 21, 1852; d. Effra-rd., Brixton, Nov. 23, 1867. Price, Wm., Surg., R.N., F. Aug. 26, 1844; d. Sept. 20, 1867.

Raleigh, Edwd. Ward, F. Aug. 26, 1844; Bengal Med. Serv., Calcutta; d. Jan. 23, 1865. Ranken, Jas., F. Aug. 26, 1844; Bengal Med. Estab., H.E.I.C.S.; d. June 18, 1848. Rayner, John, F. Aug. 26, 1844; Stockport; d. Apr. 29, 1857. Renny, Chas., Surg.-Gen., Bengal Army, H.E.I.C.S., F. Apr. 12, 1855; d. Mar. 25, 1876. Rhodes, Herbt. Ellison, F. June 12, 1890; d. ?. Ridout, John, F. Dec. 11, 1843; d. Montagu-st., Russell-sq., Apr. 26, 1855. Ring, Thos. Edwd., Surg., R.N., F. Aug. 26, 1844; d. June 5, 1856. Rogers, Thos. King, Surg., Madras Army, F. Aug. 6, 1877; d. 1884.

Samwell, Francis Peter Ballard, F. Dec. 11, 1843; Margaret-st., W.; d. in or before 1890. Saunders, Arthur Richd., F. June 10, 1880; Jamaica; d. Jan. 27, 1915. Scales, Wm. Henry, F. Dec. 13, 1855; Surg., 33rd Native Inf. Madras; d. June 24, 1858. Scriven, Sam Swain, F. May 1, 1856; Weymouth; d. June 28, 1883. Seagram, Thos., F. May 15, 1856; Canada; d. ?. Seed, Joseph, Surg., R.N., F. Dec. 9, 1852; d. Dec. 6, 1868. Shields, Chas. James, F. June 14, 1888; Melbourne and N.Z.; d. Sept. 16, 1907. Shillitto, Wm., I.M.S., F. May 13, 1857; d. Jan. 5, 1902–03. Shute, Robert Grueber, M.D., F. Apr. 17, 1845; Paris; d. Jan., 1879. Siddeley, Thos., F. Oct. 13, 1853; Bowden, Chesh.; d. 1884–85. Smith, Chas. Case, F. Aug. 26, 1844; Bury; d. before ? 1880. Smith, John, Surg., R.N., F. Aug. 26, 1844; Tasmania; d. in or before 1890. Smith, Robt. Wm., F. Dec. 17, 1857; Winchester; d. ? 1870. Smith, Wm., F. Aug. 26, 1844; Asst. to Clive (? Cline); d. Swansea, Nov. 26, 1854. Smith, Wm. Henry, F. Aug. 12, 1847; Sydenham; d. Apr. 5, 1865. Sole, Wm., F. Aug. 12, 1852; d. St. Neots, 1856. Stacy, John Edwd., F. June 9th, 1870; N.S.W. and Epsom; d. before Mar. 15, 1881. Steinhauser, John Fred., I.M.S., F. Feb. 18, 1860; d. July 29, 1866. Stevens, John Borlase, I.M.S., F. Feb. 9, 1865; d. ? 1872. Stevens, Richd., Naval Serv. of H.E.I.C., F. Jan. 12, 1854; d. Feb. 16, 1862. Stokoe, Richd., F. Aug. 12, 1852; Peckham Rye; d. in or before 1890. Strover, Thos. Rogers, Surg.-Major, Bengal Army, F. Apr. 12, 1860; d. Jan. 8, 1870.

Tarn, John, Staff Surg., R.N., F. Aug. 26, 1844; d. Nov. 7, 1877. Taylor, Henry H., F. Feb. 14, 1856; Sunderland; d. 1879–80. Thom, Wm., Surg.-Gen., I.M.S., F. June 13, 1872; d. June 11, 1904. Thomas, Andrew Appleby, I.M.S., F. Dec. 11, 1873; d. July 14, 1876. Thomas, Wm. Lloyd, F. Dec. 11, 1843; Hatfield; d. Apr. 21, 1855. Thompson, John, F. July 6, 1852; Biggleswade; d. 1879–80. Timins, Chas., F. Apr. 12, 1848; Madras; d. Bath, Jan. 5, 1892. Tippitts, Richd., F. Oct. 14, 1858; Dartford; d. Jan. 14, 1870. Toms, Philip, Surg., R.N., F. Aug. 26, 1844; d. Plymouth, May 27, 1879. Trotter, Chas., F. Mar. 4, 1858; Stockton-on-Tees; d. Sept. 17, 1877. Tucker, Fred. Hosken, M.D., F. Oct. 21, 1852; Hopwood Hall, Halifax; d. June 18, 1861. Turner, John, Surg., Bombay Army, F. Feb. 13 1862; d. in or before 1890.

Waddington, Joshua, F. Aug. 26, 1844; d. Margate, June 7, 1859. Wallis, Edwd., F. Dec. 11, 1843; Hull; d. ? 1860. Ward, John, R.N., D.I.G., F. Jan. 13, 1859; d. Aug. 1, 1894. Ward, Thos. Wm., I.M.S., F. Nov. 12, 1863; d. Quebec, 1907–08. Watson, Kenrick, F. Dec. 11, 1843; Stourport, Kidderminster; d. on or before June 26, 1848. Watson, Wm., Surg., H.E.I.C.S., d. Hove ?. Wells, Warwick Walter, I.M.S. (Bengal), F. Oct. 13, 1853; d. Apr. 9, 1892. White, Wm., Surg., Bengal Army, F. Nov. 10, 1859; d. 1885–86. Whitfield, Fred., M.D., F. Feb. 10, 1859; St. James's-ter., W.; d. ?. Wilkinson, Henry, F. Aug. 26, 1844; d. 1881–82. Webb, Jos., F. May 1, 1856; F. Oct. 16, 1856; Emigration Service; d. ?. Williams, Benj., F. Aug. 26, 1844; Madras Med. Estab., H.E.I.C.S.; d. before Apr., 1853. Williams, John, Surg., R.N., F. Aug. 26, 1844; d. 1857. Willimott, John, F. Dec. 11, 1843; Marlborough-st.; d. ? 1876. Winchester, Jas. Webster, F. June 2, 1853; Surg., Bombay Army, H.E.I.C.S., d. ? 1889. Withecombe, John Rees, M.D., Surg. I.M.S., F. Dec. 17, 1857; d. Richmond, Feb. 1, 1904. Woodford, Chas. Osmond, F. May 9, 1861; Calcutta; d. before June 19, 1883. Wooldridge, Henry, F. Nov. 11, 1869; South Yarra, Australia; d. ? before 1900. Wright, Alex., F. Apr. 12, 1855; Norton, Sheffield; d. Texas, July 28, 1864.

Yeo, Gerald, Staff Surg., R.N., F. Oct. 10, 1861; d. Mar. 27, 1887. Young, Donald Smith, F. Aug. 26, 1844; Madras Med. Estab., H.E.I.C.S.; d. Nov. 5, 1852. Young, Geo. Wm., F. Dec. 11, 1843; Mortimer-st., W.; d. ? 1850.

"SUNDAY CLOSING" AT BRITISH SPAS.

To the Editor of THE LANCET.

SIR,—An interesting paragraph in your last issue (p. 884) is a welcome reminder that the Federation of British Spas is doing good work. In the matter of the Sunday closing of bath establishments I cannot help hoping—although by no means a conservative in such matters—that they will adhere to the traditional British custom. Playing with what is after all serious treatment by week-end visitors ought not to be encouraged. We are now fully aware that the action of medical baths is gradual and cumulative and requires many days. And I think few spa physicians will assert that these ought to be given seven days in the week; or that the bath attendants during the busy season do not require a weekly respite from their responsible duties.

It is true that many years ago a Viceroy of India, since deceased, induced me, as his days (of treatment) were numbered, to obtain for him a Sunday bath in the most sabbatarian of British spas, but I am not sure that it benefited him, and it was certainly injurious to the health of the community. The recourse to the springs on Sundays is quite another matter, and religious sanction might be claimed for it and surely for music also.

As a strong believer in the intrinsic merits of the British spas, I welcome the efforts of the Federation to assist and coördinate their progress.

I am, Sir, yours faithfully,

London, Oct. 24th, 1921. R. FORTESCUE FOX.

HAIR-BALLS OF THE STOMACH.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Oct. 15th Dr. I. J. Davies, of Cardiff, gives an account of two recent cases of hair-ball or hair-cast of the stomach with an interesting analysis of 108 recorded cases. I should like to take this opportunity of briefly describing a case (not previously published) upon which I operated about 20 years ago.

The patient was a female child aged 2½ years admitted under my care to the East Suffolk Hospital. She was a persistent hair-eater; she would greedily devour portions of any rug, mat, or woollen garment such as a vest, which she could get hold of, and had torn off and swallowed most of her own hair. On examination a mass could be felt quite easily in the stomach; it was freely movable, having the shape of a cast of the interior of the organ. I operated, making a long incision on the anterior surface of the stomach midway between the curvatures and extracted the hair-cast. The stomach was closed with a double row of Lembert sutures, and the child made an uneventful recovery.

The hair-cast removed was of the shape and appearance shown in Fig. 3 in Dr. Davies's paper. Sir A. Mayo Robson asked me to give it to him for the Museum of the Royal College of Surgeons of England, where I believe it is at the present time. The case is, I think, worth recording owing to the extreme youth of the patient and the fact that it was diagnosed before operation and successfully removed. I have heard nothing of the subsequent history of the case.

I am, Sir, yours faithfully,

Ipswich, Oct. 18th, 1921. HERBERT H. BROWN.

THE COMPOSITION OF CIGARETTES.

To the Editor of THE LANCET.

SIR,—Recently an American friend sent to me the following paragraph from the *Spartanburg Journal* of Sept. 20th:—

Sept. 20, 1921. The Board of Managers of the Anti-Cigarette League in Chicago announce that they have procured the results of investigations of American medical laboratories and the London *Lancet* Laboratory which disclosed that, in addition to nicotine, cigarette and tobacco smoke were found to contain prussic acid, acrolein and carbon monoxide. "These gases were used in large quantities in the late World War to kill soldiers," adds the announcement. "There were also found several other deadly poisons, including furfural, an irritating substance said to be about 50 times as poisonous as ordinary alcohol."

As it refers to investigations of the Laboratory connected with your paper, I think that the paragraph calls for serious notice. I have read numerous articles in THE LANCET from 1899 to the present date on the question of whether or no cigarette and tobacco smoking affects the health, but I do not recollect having seen any reference, in such articles, to cigarette and tobacco smoke containing prussic acid, acrolein, furfural and the like, and I should be glad to know whether there is any truth in the statements, as to the results of your alleged investigations, made by the Board of Managers of the Anti-Cigarette League in Chicago. I am, Sir, yours faithfully,

Wembley, Middlesex, Oct. 18th, 1921. A. E. MAWN.

*** An analysis of the composition of American cigarettes was made in THE LANCET Laboratory at the end of 1899, and the report was published on Dec. 9th of that year. Its issue was determined by some remarkable statements in certain New York newspapers of paralysis, collapse, lunacy, and suicide stated to have been caused by cigarette-smoking. Our correspondent in New York purchased various brands of cigarettes in shops in New York City and sent them to THE LANCET Laboratory, while we purchased in London cigarettes of American manufacture, being in the majority of instances the same brands. The cigarettes were then subjected to close investigation, the percentage amount of nicotine being calculated as well as that of saccharine matters, opium, phosphorus, arsenic, mercury, copper, and other heavy metals. The paper, whose ratio to tobacco had been calculated, was subjected to the same scrutiny. Our examination showed that the allegations in regard to the presence of foreign poisonous materials in the cigarettes were entirely unfounded save that in one instance there was bare evidence of a trace of copper in the paper. No reference was made in the report to the presence of prussic acid, acrolein, furfural, or the like. In an article on the toxic factors in tobacco in general, published on April 6th, 1912, acrylaldehyde or acrolein is mentioned among the irritating bodies which may be present in tobacco smoke. In a further article on the same subject the presence of furfural in minute quantities is noted in the tobacco smoke of certain cigarettes and smoking mixtures, and the chemistry of its presence is explained. The mention of furfural in the *Spartanburg Journal* is misleading. The poisonous character of this substance was alluded to in connexion with an investigation into alcohol.—ED. L.

THE HARVEIAN ORATION.

To the Editor of THE LANCET.

SIR,—Owing to an unfortunate printer's error (for which you are not responsible) in your issue of Oct. 22nd (p. 840) Malpighi is credited with the authorship of "De Sedibus et Causis Morborum"; it should, of course, be Morgagni. May I take this opportunity of asking those Fellows who have received uncorrected copies of the Oration kindly to correct the error, which occurs on page 32, line 1.

I am, Sir, yours faithfully,

HERBERT SPENCER.

Harley-street, W., Oct. 24th, 1921.

A DISCLAIMER.

To the Editor of THE LANCET.

SIR,—There has recently appeared in the popular press an account of some cases of belladonna poisoning, and my name was mentioned in connexion with them. The account was published without my knowledge or consent.—I am, Sir, yours faithfully,

Limpsfield, Surrey, Oct. 12th, 1921. J. R. BENTLEY.

VICTOR HORSLEY MEMORIAL FUND.

A MEETING of the executive committee of the subscribers to the Victor Horsley Memorial Fund was held at 1, Wimpole-street, London, on Oct. 20th, with Sir CHARLES BALLANCE, K.C.M.G., in the chair.

Sir FREDERICK MOTT (hon. treasurer) presented a financial report stating that the amount of subscriptions promised was £1025, of which £875 had been paid into the bank. There was little doubt that the whole amount promised would shortly be paid, and it was probable that the interest on the deposit would be sufficient to defray the cost of printing and postage. The number of subscribers, exclusive of groups, is 229.

The following recommendations from the executive subcommittee were received and proposed for adoption by the Chairman:—

(1) That the Victor Horsley Memorial Fund be invested in the names of a Board of Trustees consisting of the President of the Royal Society, the President of the Royal College of Surgeons of England, the President of the British Medical Association, the Senior Physician of the National Hospital for the Paralysed and Epileptic (Queen-square), the Senior Surgeon of University College Hospital, in virtue of their office, together with Mr. Edward Robinson (the son-in-law of Sir Victor Horsley) and Mr. Edward J. Domville, one of the hon. secretaries of the fund, the vacancies caused by the resignation or death of either or both of these last named not to be filled up.

(2) That the trustees shall triennially appoint a lecturer to deliver a lecture in London, under the title of The Victor Horsley Memorial Lecture.

(3) That no limitation be placed on the trustees as to the country or profession from which the lecturer should be appointed, nor on the subject of the lecture to be delivered.

The resolution for the adoption of the recommendations was seconded by Sir WILLIAM ARBUTHNOT LANE, supported by Dr. GEORGE MURRAY, Dr. MARY STURGE, and Mr. W. G. SPENCER, and carried unanimously.

A vote of thanks to Mr. Domville for his services was carried by acclamation. It was resolved to close the list of subscriptions on Dec. 31st.

THE LATE DR. ELLERINGTON REED TURNER.—The death has occurred of Dr. E. R. Turner, of Kintore. Dr. Turner, who was a native of Brora, graduated M.B., C.M. at Aberdeen University in 1891. He took up general practice in Kintore 28 years ago. He was for several years Provost of Kintore, and at the time of his death was a member of the town council. He was also chairman of the late School Board, and a justice of the peace for the county. He is survived by a widow.

MEDICAL BENEFIT AMENDMENT REGULATIONS (No. 5), 1921.—These regulations make slight alterations in the rules for certification to meet certain difficulties, viz.: (1) The practitioner is asked to sign final certificates after the insured person has resumed work. This is met in para. 6, which allows a final certificate to be given for the second day, or in rural areas for the third day, after the date of the examination. (2) The absence of a suitable form of certificate in cases where the insured person is ordered a change at the seaside, or goes into a convalescent home. This is provided in the intermediate convalescent certificate. (3) The practice of certain practitioners of issuing more than one certificate without making a fresh examination of the patient. Para. 9 orders that "A practitioner having issued a certificate under these Rules shall not issue a further certificate without again examining the insured person, except that, if the original certificate is lost or mislaid, he may issue a duplicate, but in that case the form shall be clearly marked 'duplicate.'"

Medical News.

UNIVERSITY OF CAMBRIDGE.—At examinations recently held the following candidates were succesful:—

EXAMINATION FOR DIPLOMA IN PSYCHOLOGICAL MEDICINE.

Part I.—Mervyn A. Archdale, Douglas N. Hardcastle, Simon Kelly, Ralph A. Noble, and William D. Wilkins.

EXAMINATION IN SANITARY SCIENCE.

The following have passed both Parts of the Examination:—William Buchan (distinguished in Bacteriology), Dagmar Florence Curjel (distinguished in Practical Chemistry), Manohar Lal Dhir, Joseph H. Fairweather (distinguished in the principles of Hygiene and Bacteriology), Robert French (distinguished in the principles of Hygiene and in Practical Chemistry), William S. Gross, Bertram C. Haller, William J. G. Henderson, Godfrey W. Mitchell, Parasurama Parthasarathy, K. Raghavendra Rao (distinguished in the principles of Hygiene and in the Application of Sanitary Science), Henry Roger, George W. Shore, Isabel S. Thomson, Alandur Tirumalaiya, Edwin L. Warner, Robert Welch, and William L. Yell (distinguished in the principles of Hygiene).

UNIVERSITY OF EDINBURGH.—At the graduation ceremonial held on Oct. 22nd the following degrees were conferred:—

Bachelor of Medicine and Bachelor of Surgery.—W. N. J. Chapman.

Diploma in Psychiatry.—Rachel M. Barclay.

UNIVERSITY OF GLASGOW.—The following degrees were conferred on Oct. 17th:—

Bachelors of Medicine and Bachelors of Surgery.—Alice A. Alexander, Edith A. Allan, Mary Baird, Muriel C. S. Balfour, John J. Black, Alexander L. Brough, George Brown, Malcolm Brown, Muriel J. Brown, Duncan S. Buchanan, Albert J. G. Caporn, Daniel F. Cappell (with honours), Christabel L. M. Charlesworth, Alexander Chisholm, Jessie D. Christie, John Connal, David F. Craig, Margaret B. C. Craig, John G. Craik (with commendation), Elizabeth M'Vean J. Currie, James S. Currie, Alisdair C. Dewar, Joseph Dewar, Vina C. MacKay Donaldson, Arthur M'Donald Douglas, Mungo Douglas, Robert K. Duguid, James A. Dunlop, Andrew Gibb, Margaret E. Gibson, Mary D. Gilmour, Christina Gray, Alexander H. Greig, Beryl Grieve, John A. Hamilton, John K. Holmes, Benjamin Isaacs, Susan M. S. Jamieson, Frederick J. Kitt, Frances B. C. Livingston, Elizabeth K. B. Lockie, John M'Dougall, Edith M. F. M'Gill, Janet S. S. Mackay, William B. M'Queen, Ashie Main, Thomas D. Marshall, David Meikle, Nathan Mellamed, Hettie M. W. Miller, Malcolm J. Miller, Ian Murray (with commendation), Edith M. Neilson, Margaret R. Oulton, Catherine A. B. Pettigrew, Annie G. Pollock, Alexander H. Rankin (with commendation), Annabella A. Reid, Enid A. Robertson, Ian MacRae Sandilands, Jessie G. Service, Marion Smellie, Alexander Smith, Charles M. Smith, Margaret Sproul, Janet F. Steel, Donald Stewart, Jane W. Stocks, Helen Y. Stoddart, John M'Laughland Strang, Eva M. Sturrock, Hugh V. Sweeney, Dorothy B. Thomson, Edith I. Thornley, Robert R. Waters, Charles M. Whiteford, Janette R. Wilson, John Wilson (with commendation), Elizabeth M. Wyllie, John Young, and John Yule.

Mr. James R. Learmonth, who graduated on July 18th, 1921, gains the Brunton Memorial Prize of £10, awarded to the most distinguished graduate in medicine of the year.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The following candidates have passed the Triple Qualification Examination:—

THIRD EXAMINATION.

Oliver H. D. Oliver, Bruce F. Home, Daniel Maximos, Harry G. Triay, David R. Paterson, Wilhelmina C. Storrie, Johannes J. Malan, Samuel I. T. Wills, Annie F. Perry, Alexander L. Tinto, and James H. Murrell.

Pathology.—Hervey Anderson, Patrick Murray, James Kirkness, and Arthur W. H. Noble.

Materia Medica.—Charles J. Coventry, Oswald L. Shearer, Arnold Raff, and Leslie L. Armstrong.

FINAL EXAMINATION.

Vadakath Padmanabha Menon, Joseph Butler Dobson, Henry Ponnampalam Samuel, Hyman Penn, Gerrit Johannes Lamprecht, Grace O. D. Evans, John I. Hagard, Pauline Figdor, Jatindra Kumar Sen, Herbert W. Amyes, Peter E. Malloch, Lee Ee Liat, Stanley C. Alcock, Frank Walwyn, William Campbell, Leo H. Peries, John B. O'Neill, and Albert R. Rellum.

Medicine.—Edward J. Allan, Arthur R. Lambie, Arthur S. Wickremesinghe, and Parmanand Madan.

Surgery.—Andrus M. Samarasinghe and Jemima M. McKechnie Calder.

Midwifery.—Andrus M. Samarasinghe, Edward J. Allan, Arthur R. Lambie, Adriaan V. Bergh, Lionel R. Bergson, Parmanand Madan, Sayed Ghaleb, Mohamed Shafie Hassen, Jemima M. McKechnie Calder, and Frederick P. Lisboa-Pinto.

Medical Jurisprudence.—Lilian M. Williams, Matthew Burn, James M. Crombie, Andrew A. Dewar, Wilson O. Rodrigo, James A. McElroy Evers, James M. McInnes, John J. Mann, Israel Rostowsky, Otto Popper, Thomas J. Muir, Elizabeth Clark, and Isobel Reid.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At a meeting of the College held on Oct. 19th Sir David Wallace was elected President for the ensuing year, Dr. George Mackay Vice-President, and Mr. Alexander Miles secretary and treasurer.—Mr. John Smith Fraser was awarded the Liston Victoria Jubilee Prize of £100 in recognition of his work on the Pathology of the Internal Ear and its bearing on the Surgical Treatment of that organ.—The following candidates, having passed the requisite examinations, were admitted Fellows:—

Catherine E. Anderson, Pauchanan Chatterjee, Patrick A. B. Clark, James McMurray Cole, Peter C. Davie, Thomas A. J. Duff, Ernest C. Dunlop, Henry H. Elliot, George D. Fairley, Alec T. Gibb, Arthur H. Guymer, John J. Kearney, Oswald F. Lamb, Gordon B. Lowe, Hugh E. McColl, John R. MacNeill, George Nicholson, Frank C. Ormerod, George R. B. Purce, Jotindra Mohan Rakshit, Cecil G. Richardson, William S. Robertson, John Scott, and Gilbert I. Strachan.

The following candidates, having passed the Final Dental Examination, were granted the Diploma L.D.S. R.C.S. Edin.:—John M. Elliot, Douglas G. Munro, Michiel Josias de Kock, and Peter J. B. Dyce.

UNIVERSITY OF MANCHESTER.—The following appointments have been made: Dr. R. A. Webb, Demonstrator in Pathology; and Mr. J. H. Blackaby, B.Sc., Assistant Lecturer in Physics. The following awards have been made:—Junior Research Fellowship in Public Health: Dr. William Stott; Dalton Chemical Scholarship: Mr. L. R. Ridgway, B.Sc.—The annual dinner of the past and present students of the Manchester University Medical School will be held at the Midland Hotel, Manchester, on Wednesday, Nov. 9th, at 7 P.M. The president will be Dr. F. Craven Moore, and the vice-presidents Dr. D. Dougal, Dr. J. F. O'Grady, and Mr. J. Morley. Tickets, price 15*s.* 6*d.*, can be obtained before Nov. 5th from Mr. W. Geraghty, hon. secretary, at the Medical School.

UNIVERSITY OF LONDON.—Dr. W. B. Tuck has been appointed to the University Chair of Chemistry tenable at Middlesex Hospital Medical School. Dr. Tuck was in 1908 appointed a member of the teaching staff of University College, London, and after lecturing during the absence of Dr. Kellas at Middlesex Hospital Medical School was appointed lecturer in Chemistry at that School.

Dr. Charles Bolton, F.R.S., of the Graham Research Laboratories at University College, has been awarded the William Julius Mickle Fellowship of £200 in recognition of the important work in experimental medicine which he has carried out during the past five years.—Mr. H. J. Waring has been appointed to represent the University at the centenary celebrations of the Faculty of Medicine of the University of Montpellier on Nov. 5th.

ASSOCIATION OF INFANT WELFARE AND MATERNITY CENTRES: WORKERS' SECTION.—A conference will take place at 8 P.M. on Monday, Nov. 7th, at 14, Salisbury-street, Lisson-grove, London, N.W., when Miss Mildred Ransom will speak on the Professional and Business Women's Hospital League. On Tuesday, Dec. 6th, at 8 P.M., at the same place, Lady Barrett will open a discussion on Birth Control. Medical men or women willing to address the section at one of the 1922 conferences on some subject of vital interest to infant welfare workers are asked to communicate with the Hon. Treasurer, Mrs. M. C. D. Walters, 105, Addison House, Grove End-road, London, N.W. 8, or the Hon. Secretary, Miss S. Elliott, St. George's House, 220, Cable-street, London, E. 1.

SOCIETY OF MEDICAL OFFICERS OF HEALTH: ANNUAL DINNER.—The annual dinner was held on Oct. 21st at the Café Royal, Regent-street, Dr. W. J. Howarth, the President, being in the chair. There was a large attendance of Fellows and members and the guests included the Bishop of London, Prof. C. S. Sherrington, Sir Aston Webb, Sir Anthony Bowlby, Sir George Newman, Mr. J. W. Pratt, M.P., Sir Philip Magnus, M.P., Sir Arthur Robinson, and Dr. T. W. H. Garstang (Chairman of the Public Health Committee of the British Medical Association). A letter was read from Sir Alfred Mond, M.P., Minister of Health, regretting his inability to be present. Mr. J. W. Pratt proposed the toast of the Society of Medical Officers of Health. He said that before entering Parliament he was a member of the Corporation of Glasgow and of its health committee, and had realised how much it had meant to Glasgow to have had in the last 60 years such a succession of eminent M.O.H.'s. In that time the death-rate of the city had been halved and twice halved, and this was largely due to the labours of these men, who were not only expert advisers, but patient and persistent pioneers in the path which the community now sought to follow. He referred to the recent action of a council in discharging a woman medical officer on her marriage, and hoped that no one, whether man or woman,

would be forced to remain unmarried as a condition of holding high office. Long before a Ministry of Health was talked of there was in every M.O.H.'s office the promise and prophecy of such a ministry. The Society of M.O.H.'s had a great influence on public opinion which was never more ripe for great advances along all paths of physical improvement. The President, in the course of his reply, said the Ministry was the Ministry of Health, and not the Ministry of National Health Insurance, and that money spent on preventive medicine was capable of much greater return than anything spent on curative medicine. Sir George Newman proposed the toast of "Pulpit, Parliament, and the Public Health." He said that these terms stood for the moral law or law of conduct, the law of the State, and the law of science. In the lean years that lay before them it was by the association of these three principles that they would commend the laws of preventive medicine to the English people. This had not yet been done, nor had the principles been practised. There was a vital and integral relationship between the character of a people and its public health. He associated with the toast the Bishop of London, whom he characterised as an ally of public health in the highest sense; and Sir Philip Magnus, who would always be remembered for securing fixity of tenure for M.O.H.'s, and who had that day been elected as an Honorary Fellow of the Society. The Bishop of London recalled his past experiences in association with public health at Bethnal Green and Fulham, and his present position as chairman of the Council for Public Morality of London. Sir Philip Magnus said that half of his constituency was composed of the medical and teaching professions, and that he represented more doctors than any other M.P. As the Bishop had claimed for the Church, so he claimed for teachers that they were colleagues of that Society, their common motto being *Mens sana in corpore sano*. Dr. F. E. Fremantle, M.P., proposed the health of the visitors. Prof. Sherrington, replying, said that to the pure scientist the vocation of the M.O.H. was perhaps the most attractive branch of practical medicine. The fruits of science were partly practical (like wireless telegraphy, or the rotatory hair-brush!) and partly theoretical (like relativity, or the nuclear structure of the atom). The M.O.H. was out for both kinds of result, and thus showed a real acceptation of the true faith of science. The President spoke in appreciation of the work of Captain Elliston, their executive secretary, during whose term of office their membership had increased from 600 to 1600. Dr. Herbert Jones proposed the health of the officers of the Society, and Dr. G. F. Buchan and Dr. R. A. Lyster replied.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.—At the annual stated meeting of the President and Fellows of the College, held on Oct. 18th, the following officers were elected for the coming year:—President: Sir James Craig. Vice-President: Dr. N. M. Falkiner. Censors: Dr. N. M. Falkiner, Dr. J. A. Matson, Dr. W. G. Harvey, and Dr. R. A. MacLaverty. Representative of the College on the General Medical Council: Sir John Moore. Representatives of the College on the Committee of Management: Dr. Walter Smith, Sir John Moore, and Dr. T. P. C. Kirkpatrick. Treasurer: Dr. H. T. Bewley. Registrar: Dr. Kirkpatrick. Librarian: Mr. R. Phelps.—The St. Luke's Day service of the College—the first held since 1913—was held in the evening, when more than a hundred Fellows and guests dined together. Immediately before dinner, when the company had assembled, the Provost of Trinity College, the Right Rev. and Right Hon. Dr. J. H. Bernard, who had recently been elected an Honorary Fellow of the College, was introduced by the Registrar, Dr. T. P. C. Kirkpatrick, and admitted. Among the guests present at the dinner were the Archbishop of Dublin, the Lord Chancellor of Ireland, the Vice-President of the Royal College of Surgeons in Ireland, and the President of University College, Dublin.

UNIVERSITY OF SHEFFIELD: *Post-graduate Demonstrations*.—The series of post-graduate demonstrations arranged by the Faculty of Medicine for the Michaelmas term promises to be most popular. Already about 50 practitioners have applied to attend, and it is probable that more will join later. The subjects have been chosen after consultation with the local branch of the B.M.A. and the Panel Committee, whose advice and help to the Clinical Studies Committee of the Faculty has been valuable. On each day, twice weekly, two members of the staff give short demonstrations of about three-quarters of an hour each on their own special subjects. Demonstrations on pathology and physiology are included. The demonstrations are held at the Royal Infirmary and Royal Hospital, and a certain number on gynæcological cases at the Jessop Hospital for Women. The opening demonstrations were held at the infirmary on Oct. 12th, when Prof. A. M. Connell dealt with cases of fracture, and Prof. E. Mellanby discussed diets.

LADIES MEDICAL GOLFING SOCIETY.—The autumn meeting will be held at Oxhey Golf Club on Tuesday, Nov. 8th. Particulars may be obtained from the Hon. Secretary, Mrs. E. Laming Evans, 50, Seymour-street, London, W. 1.

ROYAL SUSSEX COUNTY HOSPITAL.—Princess Mary will visit Brighton on Nov. 22nd to open the additional branch of the Royal Sussex County Hospital's Nurses' Home. The Nurses' Home has been extended and admirably equipped at a total cost of £23,000.

ROYAL SOCIETY OF ARTS.—The opening meeting of the session will be held at John-street, Adelphi, London, W.C., on Wednesday, Nov. 2nd, when an address (illustrated by experiments) will be delivered at 8 P.M. by Mr. Alan A. Campbell Swinton, F.R.S., chairman of the council, on Wireless Telegraphy. On Nov. 9th, at 8 P.M., Mr. D. R. Wilson, secretary of the Industrial Fatigue Research Board, will address the society on the Work of the Industrial Fatigue Research Board and its Applications to Industry, Mr. William Graham presiding.

RONTGEN SOCIETY.—A general meeting will be held on Nov. 1st, at 8.15 P.M., in the Institution of Electrical Engineers, Savoy-place, Victoria Embankment, London, W.C. 2. The plaques awarded for the best collections of four prints submitted for the exhibition of radiographs in June will be presented, and the presidential address will be read by Prof. J. W. Nicholson, F.R.S. Members wishing to read papers or to show apparatus or lantern slides to the society are requested to communicate with the hon. secs.: Dr. E. A. Owen, D.Sc., the National Physical Laboratory, Teddington, Middlesex; and Dr. Russell J. Reynolds, 140, Harley-street, London, W. 1.

PROVISION FOR THE BLIND IN ROSS AND CROMARTY.—At a meeting of the Ross and Cromarty County Council, held on Oct. 20th, the finance committee reported on the conference held in connexion with the working of the Blind Persons Act. Subject to the approval of the Board of Health, it is proposed that the counties of Moray, Nairn, Inverness, Ross, Sutherland, and Caithness should combine in forming a joint scheme, under which provision could be made for blind persons within the area through the agency of the Northern Counties Institute for the Blind, and their outdoor society, and that each authority should contribute towards the total cost in accordance with the number of blind persons from their respective areas receiving benefit through the institute.

FIELD LABORATORY FOR FEEDING EXPERIMENTS. A few months ago the Sheffield Panel Committee allotted a sum of £1000 to the equipment of a field laboratory. The University has now acquired a site, and the work of building the necessary laboratories and animal houses is in active progress. The site chosen is on the west side of the city about two miles from the University. It is on the edge of the moors, nearly a thousand feet above sea-level. To those who only know Sheffield from passing through it in the train, it may be somewhat of a surprise to hear that within such short distance of the city and its smoke there should be grouse moors. Yet so it is, and at the site of the new field laboratory there is no sign of the smoke or sound of the noise of a great manufacturing centre. The laboratory will be under the immediate charge of Prof. E. Mellanby, and he and Mrs. May Mellanby will continue there the experimental work which has hitherto been carried on in the field laboratory at Cambridge.

ROYAL VICTORIA HOSPITAL, BELFAST: PRESENTATION BUST.—At a meeting held on Oct. 19th a presentation bust of Sir William Crawford, J.P., a former chairman of the board of management of the hospital, was placed in the King Edward Hall of the institution. The presentation was made on behalf of the subscribers by the Rev. W. A. Watson. In accepting the gift Prof. J. A. Lindsay, chairman of the board, spoke in warm terms of Sir William Crawford's services. He was chairman from 1901 to 1908, and again from 1914 to 1918, when he retired on grounds of health. He was assiduous in the discharge of his duties and took an active interest in all departments of the institution, while his unfailing courtesy earned for him the warm regard of all his colleagues. His period of office covered an important period in the history of the hospital—the epoch which coincided with the removal of the hospital from its former premises in Frederick-street to the present buildings. It was a matter for congratulation that, at a time when so many problems had to be faced, and such large financial responsibilities incurred, the hospital had had such a capable administrator and so wise a guide at its head. The present financial position of the hospital, so much more favourable than that of most of the great hospitals of the kingdom, owed much to his financial ability and judicious oversight. The bust was executed by Miss Acheson, a niece of Sir William Crawford, and is a faithful and pleasing likeness.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, OCT. 19TH.

Medical Appointments at the Post Office.

Sir WALTER DE FRECE asked the Postmaster-General if, in making any appointment of a medical officer to the Post Office, he would ensure that preference was given in every case to applicants who had served in the war; and in how many cases of recent appointments this had not been done.—Mr. KELLAWAY replied: In making an appointment as medical officer to the Post Office regard is paid to service with the forces; but consideration has also to be given to other factors, such as professional qualifications and length of residence in the district. There are no records available which would enable me to reply to the second part of the question.

THURSDAY, OCT. 20TH.

Guardianship of Infants Bill.

Viscountess ASTOR asked the Prime Minister whether he could give an assurance that time would be given this Session to pass the Guardianship of Infants Bill through its final stages.—Mr. LLOYD GEORGE replied: In view of the definite assurance given by the Leader of the House on August 19th last that the only legislation to be taken would be that which necessitated the calling together of the House, I regret it will not be possible to deal with this Bill during the present sittings, which are only undertaken for the purpose of dealing with the problem of unemployment.

Milk for Infants and Mothers.

Viscountess ASTOR asked the Minister of Health whether he had received any protests concerning his decision to reduce the Government financial aid to local authorities for the provision of milk to infants and mothers; and whether he could reconsider the matter so as to give once again half the cost in cases where the medical officer to the local authority issued a certificate of need or where some other suitable safeguard against unnecessary expenditure was provided.—Mr. MYERS asked the Minister of Health if he was aware that there was resentment on the part of the local authorities of the country towards the letter from his department which called upon them to keep separate accounts of the milk which were given free or below cost price to necessitous cases under maternity and infant welfare regulations and intimated that the State grant upon this part of the work was to be reduced from 50 to 5 per cent.; and whether, having regard to the good work which had been and was being done by the service, the reduction of the infantile death-rate which had been effected, together with the hardship which would be imposed upon poor people, the adverse effect upon infant life, and the added burdens to the local authorities under the conditions of the circular, he would withdraw the circular and restore the 50 per cent. grant for the whole of the infant welfare service.—Captain COOTE asked the Minister of Health whether he had recently reduced the contribution payable by him to local authorities for the provision of milk to mothers and infants from 50 to 5 per cent. of the cost; whether he was aware that this reduction coincides with the beginning of winter, when milk was dearest, and with widespread distress owing to unemployment; what economy he was effecting by this reduction; and whether it could be secured in a less disastrous way.—Sir A. MOND replied: The very great increase in this service by local authorities has caused the estimate of the Government grant during the financial year already to be exceeded, and on strictly financial grounds severe reduction is entirely justified. But in view of the commitments of local authorities during the financial year and the distress existing from the extent of unemployment, I have decided that the 50 per cent. grant for milk supplied free or at less than cost price under the conditions laid down in Circular 185 will be continued until the end of the financial year.

Sickness among Children.

Mr. LEONARD LYLE asked the Minister of Health if his latest reports showed any increase of sickness, especially among children, due to under-feeding or semi-starvation resulting from short time and unemployment.—Sir A. MOND replied: I cannot say from the information at my disposal that there has been an increase of sickness among children as a result of short time or unemployment.

Unemployment and Sick Insurance Benefit.

Mr. JOHN DAVISON asked the Minister of Health whether, in view of the fact that large numbers of unemployed persons would be thrown out of the national health insurance benefit in consequence of arrears of contributions due to unemployment, he would take steps to exempt unemployed persons from national health insurance contributions during the present emergency.—Mr. WILLIAM THORNE asked the Minister of Health if he was aware that large numbers of unemployed found that, although when in work they were compelled by law to insure themselves against sickness, now that they had been out of work for 12 months they had lost the right to all sick pay, even though they might have contributed in full since the Insurance Act was passed nine years ago, owed no arrears for periods of unemployment, and had never received any benefits; whether it was the intention of the Government to set matters right by passing a one-clause Act restoring to workers the right to remain insured against sickness during unemployment on having made proper payment for that purpose; and if he was aware that all the approved societies had entered a most emphatic protest against such men being deprived of their sick pay under the Health Insurance Act.—Sir A. MOND replied: I am aware that the provisions of the National Health Insurance Acts relating to the cessation of insurance on ceasing employment cause some hardship in special cases in the present abnormal conditions of prolonged unemployment, and the question of taking steps to meet this situation is at present under consideration.

Appointments of Medical Referees.

Sir WALTER DE FRECE asked the Minister of Health whether he would undertake in future to give preference to all candidates applying for the post of medical referee who had served in the war, even if their absence from home in the service of the State naturally gave them a shorter record of home service in the district.—Sir A. MOND replied: In making appointments to the post of medical referee preference is given to men who have served in the war, other things being equal, but with due regard to the fact that many practitioners who did not serve in the armed forces had applied for such service and had been kept at home by the decision of the competent authorities that their services were indispensable for the needs of the civil population.

Construction of Roadway to Wingrove Hospital.

Mr. GRATTAN DOYLE asked the Minister of Health whether he was aware that the Newcastle-upon-Tyne Board of Guardians, having received his consent to construct a roadway to their Wingrove Hospital and to employ on the work as much unskilled labour as possible from able-bodied unemployed men in receipt of assistance from the guardians, made application through the local authority to the Unemployment Grants Committee for a grant towards the expenditure incurred by them upon the labour directly employed, and that the Unemployment Grants Committee had declined to make a grant merely on the grounds that the men were not engaged through the local labour exchange, notwithstanding that the guardians' action was intended to save the payment both of unemployment benefit and Poor-law relief, all such labour employed being already registered at the labour exchange; and, if so, what action he proposed to take in the matter in view of the distressing prevalence of unemployment in Newcastle-upon-Tyne.—Sir A. MOND replied: This matter was dealt with by the Unemployed Grants Committee, and I understand that they refused a grant because the guardians failed to comply with the condition requiring preference to be given to unemployed ex-Service men, but I am in communication with the committee on the matter.

MONDAY, OCT. 24TH.

Testing Clinical Thermometers.

Mr. HAILWOOD asked the President of the Board of Trade if he was aware of the inaccuracy of a large percentage of clinical thermometers; and would he take steps to introduce some method of test and certificate of correctness.—Mr. STANLEY BALDWIN replied: This is a matter which can only be dealt with by legislation, and I would remind my hon. friend that a Bill to require the testing of clinical thermometers was introduced by the Government earlier in the session, but was not proceeded with owing to lack of time. I hope to reintroduce the Bill next session. In the meantime I am glad to say that most British manufacturers of clinical thermometers are voluntarily having their products tested at the National Physical Laboratory.—Mr. KILEY asked the President of the Board of Trade whether, in the case of a person purchasing a clinical thermometer and not being content with the maker's guarantee and desiring to have the instrument tested, it was possible for the individual to take the same to the national laboratory, Kew, and have it tested for a few pence; and, if this was not so, could he make arrangements for it being done in such cases where it was desired.—Mr. STANLEY BALDWIN replied: Single clinical thermometers can be tested at the National Physical Laboratory on payment of a fee of 1*s.* 6*d.*; the fee when large quantities are submitted is 3*d.* per instrument. This arrangement has been in existence for several years.

Importation of Sodium Salts.

Mr. NEWBOULD asked the President of the Board of Trade whether he was aware that six small samples of sodium salts, sent on the 5th instant from Paris to a firm in London for test purposes, were being detained by the Customs authorities; that, on the 11th instant, the Customs authorities advised the consignee that the samples were being detained in order that entry should be made, value declared, and duty paid; that the consignee replied on the same day that the samples together weighed less than 1 lb., were of no commercial value, and were not dutiable; and that he wrote again on the 18th instant complaining that the samples were still detained; and whether he would have inquiries made into this case.—Mr. HILTON YOUNG (Financial Secretary to the Treasury) replied: I am having inquiries made and will inform the hon. Member of the result in due course.

Housing Schemes.

Mr. NEWBOULD asked Sir John Gilmour, as representing the First Commissioner of Works, whether he could make a statement as to the number of housing schemes on which the Office was still engaged and the number which had been completed.—Sir JOHN GILMOUR replied: The Department is engaged on 47 schemes for 32 local authorities. Four schemes have been completed.

Suggested Repeal of the Insurance Act.

Sir EDWARD NICHOLL asked the Minister of Health whether, in view of the dissatisfaction with the working of the National Insurance Act, he would consider the advisability of its early removal from the statute book.—Sir A. MOND replied: I am aware that there is periodical criticism of certain aspects of the scheme embodied in the National Health Insurance Acts, but on the whole all the evidence tends to show that national health insurance has been most beneficial in its operation. While I am considering the advisability of inquiring what improvements may be effected in its working there can be no question of repeal.

Insurance Act Contributions and Expenses.

Mr. HAYWARD asked the Minister of Health what were the total contributions of the State, employers, and employed, respectively, under the National Health Insurance Acts for the last complete financial year; and what were the total administrative and working expenses under all heads for the same period apart from payments made in respect of medical attendance, drugs, and other benefits.—Sir A. MOND replied: The totals (in round figures) for the year 1920 as respects England and Wales are as follows:—Total contributions by State, £8,800,000; by employers, £9,800,000; by employed, £10,300,000. Total administrative and working expenses under all heads, £4,500,000.

Medical Examination of Aerodrome Workers.

Mr. MYERS asked the Secretary of State for Air whether he was aware that in connexion with work at the Shotwick Aerodrome for a permanent depot for the Air Force the workmen were being subjected to medical examination although the employment was only of a temporary character; that several men over 50 years of age had been discharged in consequence; that one man had been discharged for having three defective teeth; that this action was causing resentment amongst the workmen and might involve a stoppage; and whether he would give instructions that all men employed on work of a temporary character should not be subjected to medical examination of this kind.—Capt. GUEST replied: The regulations provide that civilian employees (unless casually employed for less than six working days) will, on engagement, be examined by a medical officer as to their physical fitness for employment. A rigid standard of physical fitness is not, however, required, and it is sufficient for the medical officer to ensure that prospective employees are—(*a*) fit to carry out the work for which they are engaged; and (*b*) not suffering from any infectious or contagious disease. I am calling for a report in the case referred to, and will communicate with the hon. Member.

Expenditure on Public Assistance.

Sir WILLIAM DAVISON asked the Chancellor of the Exchequer what was the total national expenditure from both rates and taxes on public assistance in 1910 and 1920 respectively, especially under any Acts relating to the Poor-law, education, provision of meals, old age pensions, public health, housing, national health insurance, unemployment insurance, &c.—Mr. HILTON YOUNG replied: The hon. Member will find all the information available set out in a recent return of the total expenditure under certain Acts of Parliament, House of Commons Paper 139 of 1921.

Post Office Medical Appointments.

Sir WALTER DE FRECE asked the Postmaster-General whether he would undertake in future to give preference to all candidates applying for the post of Post Office medical officer who served in the war, even if their absence from home in the service of the State naturally gave them a shorter record of home service in the district.—Mr. F. G. KELLAWAY replied: Service with the forces during the war is regarded by the Post Office as a very important factor when appointing medical officers. But to regard it as the only factor of importance would be detrimental to the medical service. The fact of a doctor being absent from his district during his service with the forces would not be allowed to prejudice his prospects of obtaining a Post Office appointment.

TUESDAY, OCT. 25TH.

Venereal Disease and Divorce.

Mr. RENDALL asked the Secretary of State for the Home Department whether, as the giving of venereal disease by a husband to a wife, or vice versa, could not be made the subject of an action for damages or the sole ground of an application for a separation or a divorce, the Government would propose legislation to amend the law in these respects.—Mr. SHORTT replied: I regret that I cannot hold out any hope of legislation on this subject at present.

Employed Contributors and Health Insurance.

Mr. ALFRED DAVIES asked the Minister of Health whether he had received any protests from approved societies with regard to the circular issued to them allowing to treat employed contributors under the National Health Insurance Act with a certain amount of latitude in the event of the necessary number of contributions not having been paid in consequence of unemployment; whether he was aware that the circular was regarded as inadequate and that certain approved societies were urging the reintroduction of the benevolent fund or the deduction of a percentage of each society's valuation surplus to be placed in a separate fund, so that the liability might be distributed over the whole of the societies and not limited to any particular one whose members had been hardest hit by unemployment; and whether he would give this matter further consideration.—Sir ALFRED MOND replied: It has been represented to me by approved societies of various types that the concession recently made with reference to the arrears of insured persons who were employed for less than 26 weeks in the past contribution year is not sufficient to meet the needs of the case, and the whole question is having my careful consideration with a view to the immediate introduction of amending legislation.

Appointments.

KIRK, JOHN, M.A., B.Sc., M.B., Ch.B.Glasg., D.O.Oxon., has been appointed Honorary Assistant Ophthalmic Surgeon to the Royal Eye and Ear Hospital, Bradford.

THOMAS, W. E., L.R.C.P. & S.Edin., L.R.F.P.S.Glasg., Medical Officer of Health for Bridgend, Glamorganshire.

TURTON, J. R. H., M.B., B.S.Lond., F.R.C.S.Eng., Assistant Surgeon to the Royal Sussex County Hospital, Brighton.

WATKYN-THOMAS, F., B.Ch. Cantab., F.R.C.S. Eng., Assistant Surgeon to the Central London Throat and Ear Hospital.

Bradford Municipal Hospital (St. Luke's).—Senior Physician, WILLIAM WRANGHAM, O.B.E., M.D.Lond.; Junior Physician, W. H. THOMPSON, M.R.C.S.Eng; Senior Surgeon, BASIL HUGHES, D.S.O., F.R.C.S.Eng; Junior Surgeon, COLIN MACKENZIE, O.B.E., F.R.C.S.Eng; Ophthalmologist, G. H. OLIVER, M.R.C.S., D.O.Oxf.; Anæsthetist, W. E. HAYBURN, M.B.Camb.

St. Mary's Hospital Medical School Medical Unit.—LANGMEAD, F., M.D., F.R.C.P.Lond., Director; WILSON, C. M., M.D., B.S., F.R.C.P.Lond., First Assistant; ALPORT, C., M.D., M.R.C.P.Lond., Second Assistant; CALVERT, E. G. B., M.D., D.P.H.Belf., Third Assistant.

Certifying Surgeons under the Factory and Workshop Acts.—MILNE, J. M., L.R.C.P. & S.Edin., L.R.F.P.S.Glasg. (Carnoustie); REYNOLDS, W. A., M.B., Ch.B.Bristol (Paignton); and MCTURK, J., L.R.C.P. & S.Edin., L.R.F.P.S.Glasg. (Newton Stewart).

Vacancies.

For further information refer to the advertisement columns.

Aberystwyth Infirmary and Cardiganshire General Hospital.—Res. H.S. £250.

Bedford County Hospital.—Asst. H.S. £150.

Birkenhead Borough Hospital.—Jun. H.S. £200.

Birmingham General Hospital.—Two H.S.'s. £100.

Bootle Borough Hospital.—Third H.S. £150.

Bristol General Hospital.—Cas. H.S. £175.

Bristol Royal Infirmary.—H.S. £120.

Bury Infirmary.—Junior H.S. £150.

Cardiff, King Edward VII. Hospital.—Hon. Asst. S.

Central London Throat, Nose, and Ear Hospital, Gray's Inn-road.—Second Res. H.S. £75.

Clinical Research Assoc., Adelphi.—Asst. Director of Labs. £250.

Cornwall Education Committee.—Female Asst. Sch. M.O. £500.

Darlington County Borough.—Ven. Dis. M.O. £750.

Dumfries, Crichton Royal Mental Hospital.—Clin. Pathologist. £100.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—S. Asst. S. Asst. P.
Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—Asst. H.S. £150.
Great Northern Central Hospital, Holloway-road, N.—Two S.'s.
Grimsby and District Hospital.—R.H.S. £300.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S.'s. £50.
Hove Hospital, Sackville-road, Hove.—Res. M.O. £250.
Hull Royal Infirmary.—Hon. Pathologist.
Kensington, Marloes-road Infirmary.—Fourth Asst. M.O. £200. Visiting Phys. £100.
Kettering and District General Hospital.—Res. M.O. £250.
Leeds, Beckett's Park Hospital.—Radiologist. £600.
Leeds Public Dispensary.—Res. M.O. £200.
London Fever Hospital, Islington, N.—Res. M.O. £500.
London Jewish Hospital, Stepney Green, E.—R.M.O. £150. J.R.M. and Cas. O. £100. Also A.P.
Manchester County Asylum, Prestwich.—Asst. M.O. £528 18s.
Manchester Royal Infirmary.—Asst. M.O. £35.
Metropolitan Ear, Nose, and Throat Hospital, 2, Fitzroy-square, W. 1.—Two Sen. Clin. Assts.
Mothers' Hospital, Lower Clapton-road, E.—Res. M.O.
North Riding of Yorkshire County Council Education Committee.—Asst. Sch. M.O. for Saltburn District. £500.
Oxford, Radcliffe Infirmary and County Hospital.—Hon. P.
Plymouth, South Devon and East Cornwall Hospital.—H.S. £200.
Preston and County of Lancaster Royal Infirmary.—H.S. £200.
Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—Sen. Res. M.O. £100. Asst. Res. M.O. £60. District Res. M.O. £80.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Asst. P.
Rochdale Infirmary and Dispensary.—Sen. H.S. £300.
Royal Eye Hospital, St. George's Circus, Southwark, S.E.—Hon. Asst. S.
Royal Free Hospital, Gray's Inn-road, W.C.—Res. Asst. Cas. O. £50. Female Obst. H.S. £50.
Royal National Orthopædic Hospital, Great Portland-street, W.—Pathologist. 50 gs. Hon. Surg. for Ear, Nose, and Throat. Hon. Ophth. Surg.
Royal Naval Medical Service.—Surg. Lieuts.
Salford Royal Hospital.—Hon. A.P. Hon. A. Gynæcologist.
Sheffield Royal Infirmary.—H.S. H.S. for Ear, Nose and Throat. Asst. Cas. O. Each £150.
South Africa Mental Hospital Service.—Asst. P. £400.
Stockport, Stepping Hill Hospital.—Res. Asst. M.O. £250.
Sunderland Royal Infirmary.—H.S. £200.
Swindon, Venereal Diseases Clinic.—Part-time Officers. £1 1s. per hour.
University College Hospital, Gower-street, W.C.—Tuberc. O. £250.
Virginia Water, Surrey, Holloway Sanatorium.—Jun. Asst. M.O. £400.
Warwickshire County Council.—Asst. M.O.H. £550.
West London Hospital, Hammersmith-road, W.—Hon. Surg. Registrar.
Winchester, Royal Hampshire County Hospital.—H.P. H.S. Each £150.
Worcester General Infirmary.—Res. M.O. £200.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of the following vacant appointments: Eyam (Derby), Rufford (Lancaster).

Births, Marriages, and Deaths.

BIRTHS.

HALL.—On Oct. 21st, at 1, Eslington-road, Newcastle-on-Tyne, to Margaret, wife of George Hall, C.M.G., M.D., M.R.C.P., —a son.

JACKSON.—On Oct. 15th, at Queen's Hospital, Sidcup, the wife of T. Jackson, L.R.C.P.E., L.D.S., of a son.

SAMPSON.—On Oct. 20th, at Sudbury, Ryde, I.W., the wife of Basil F. Sampson, M.C., M.B., B.S.Lond., of a son.

SAVY.—On Oct. 23rd, at The Grange, Kingussie, Inverness-shire, the wife of Felix Savy, M.B., Ch.B., of a son.

WESTON.—On Oct. 17th, at 23a, Connaught-street, Marble Arch, W.2, the wife of Bt.-Major T. A. Weston, M.B., B.C., R.A.M.C., of a daughter.

MARRIAGES.

ROWE—MATTHEWS.—On Oct. 19th, at Seven Kings Wesleyan Church, Harold Ridges Rowe, L.D.S.Eng., of Queensland, South Africa, to Emma E., only daughter of Thomas M. Matthews, Pembroke-road, Seven Kings.

VEVERS—CARPENTIER.—On Oct. 12th, at the Church of the British Embassy, Paris, Oswald Henry Vevers, M.R.C.S., L.R.C.P., to Geneviève Gabrielle Marie, only daughter of the late Julien Carpentier and the late Madame Bournisien de Valmont.

DEATHS.

DALY.—On Oct. 18th, at Albion-street, Hull, Edward Owen Daly, M.D.Oxon., aged 68 years.

SCARLETT.—On Oct. 20th, very suddenly, at Higham's Park, Chingford, Essex, Ferdinand L. L. Scarlett, M.D., M.Ch., aged 70 years.

STEELE.—On Oct. 22nd, the result of an accident, Richard Steele, M.R.C.S., L.R.C.P., of Willifield Way, Golders Green, and late of Peatling Magna, Leicester, aged 66 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Monday, Oct. 31st.

SOCIAL EVENING: The first Social Evening of the Session will be on Monday, Oct. 31st, at 8.30 P.M., when Fellows and their friends will be received by the President, Sir John Bland-Sutton and by Lady Bland-Sutton. The President will deliver a short Address at 9 P.M. on Choroid Plexuses and Psammomas.

The Library will be open and various objects of interest will be exhibited. Music, light refreshments, and smoking.

MEETINGS OF SECTIONS.

Tuesday, Nov. 1st.

SURGERY: SUB-SECTION OF ORTHOPÆDICS: at 5.30 P.M. (Cases at 5 P.M.)
Cases will be shown by:
Mr. P. Maynard Heath: Resection of Upper End of Diaphysis of Humerus for Myeloma, and Replacement by Beef Bone Graft.
Mr. R. C. Elmslie: A Case of Congenital Absence of Sacrum.
Cases will also be shown by the President (Mr. Laming Evans), Mr. H. A. T. Fairbank, and Mr. W. Rowley Bristow.

PATHOLOGY: at 8.30 P.M., at the Laboratories of the Imperial Cancer Research Fund, 8–11, Queen-square, W.C. 1.
Dr. W. Cramer: Vitamins and Cancer Growth.
Dr. A. H. Drew: In-vitro Culture of Tissues in Artificial Media.
Dr. B. R. G. Russell: Carbohydrate Metabolism of Tumours
Dr. J. A. Murray: Experimental Tar-cancer.

Wednesday, Nov. 2nd.

SURGERY: at 5.30 P.M.
The opening paper of the session will be given by the President (Mr. Raymond Johnson) on Carcinoma of the Small Intestine.

Thursday, Nov. 3rd.

BALNEOLOGY AND CLIMATOLOGY: at 5.30 P.M.
Presidential Address by Dr. Hill Joseph: A Retrospect of a Quarter of a Century of Seaside Practice.
Members of the Section, with guests, will dine together at the Welbeck Palace Hotel, Welbeck-street, W., at 6.30 P.M. Those intending to be present are requested to send their names to Dr. C. F. Sonntag, 80A, Belsize Park-gardens, N.W. 3, not later than the last post on Nov. 2nd.

OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.
Exhibits: Mr. A. E. Mortimer Woolf: A Specimen of Double-ruptured Interstitial Ectopic Pregnancy.
Dr. W. J. O'Donovan (introduced by Mr. Gordon Luker): A Gold Button Contraceptor.
Short Communication: Dr. G. Cranstoun: Cystic Adenoma of the Uterus.
Paper: Dr. R. L. MacKenzie Wallis: Glycosuria in Pregnancy.

Friday, Nov. 4th.

LARYNGOLOGY: at 4.45 P.M. (Cases at 4 P.M.)
Cases and specimens will be shown by Mr. Thomas Guthrie, Mr. E. D. Davies, Dr. Irwin Moore, Mr. G. W. Dawson, Prof. Shattock, Mr. Lawson Whale, Sir James Dundas-Grant, and others.

ANÆSTHETICS: at 8.30 P.M.
Mr. H. E. G. Boyle: Report on his visit as Official Representative of the Section to the first meeting of the Canadian Society of Anæsthetists at Niagara, and to the meeting of the American Society of Anæsthetists at Boston in June last.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.
WEDNESDAY, Nov. 2nd.—8 P.M. Opening Meeting.—Mr. A. A. Campbell Swinton: Wireless Telegraphy.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.
Museum Demonstrations in the Theatre of the College for Advanced Students and Medical Practitioners:—
MONDAY, Oct. 31st.—5 P.M., Prof. S. G. Shattock: Degenerations: Necrosis.
FRIDAY, Nov. 4th.—5 P.M., Sir Arthur Keith: Specimens and slides illustrating various kinds of Disordered Growth at the Epiphyseal Line.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.
TUESDAY, Nov. 1st.—5 P.M., Mitchell Lecture:—Dr. F. Parkes Weber: The Relations of Tuberculosis to General Conditions of the Body and Diseases other than Tuberculosis.
THURSDAY, Nov. 3rd.—5 P.M., Bradshaw Lecture:—Dr. Michael Grabham: Sub-Tropical Esculents.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, Oct. 31st.—12.15 P.M., Dr. Burnford: Pathological Demonstration. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. Dr. Morton: X Ray Department. Dr. Simson: Diseases of Women. 5 P.M., Mr. Donald Armour: Practical Surgery. (Lecture I.)
TUESDAY, Nov. 1st.—10 A.M., Dr. Robinson: Gynæcological Operations and Visit to Wards. Mr. Steadman: Dental Department. 12 noon, Mr. Sinclair: Gall-

stones. (Lecture.) 2.15 P.M., Mr. Addison: Operations. 2.30 P.M., Mr. Tyrrell Gray: Visit to Surgical Wards. Dr. Pritchard: Demonstration of Cases, Medical Wards. 5 P.M., Mr. Banks Davis: Nasal Catarrh. (Lecture.)

WEDNESDAY.—10 A.M., Dr. Arthur Saunders: Medical Diseases of Children. 11 A.M., Mr. MacDonald: Demonstration of Cystoscopy. 2 P.M., Mr. Tyrrell Gray: Operations. Mr. Gibb: Eye Department. 5 P.M., Dr. Burnford: Diagnosis of Infective Diseases.

THURSDAY.—12 noon, Dr. Scott Pinchin: Disease of the Heart. 2 P.M., Mr. MacDonald: Surgical Outpatients. Mr. Simmonds: Orthopædic Department. 5 P.M., Mr. Donald Armour: Practical Surgery. (Lecture II.)

FRIDAY.—10 A.M., Mr. Dudley Buxton: Dental Department. 2 P.M., Dr. Burrell: Medical Out-patients. Dr. Pernet: Skin Department. Mr. Banks Davis: Diseases of the Throat, Nose, and Ear. 5 P.M., Mr. MacDonald: Hæmaturia. (Lecture.)

SATURDAY.—9 A.M., Dr. Burnford: Bacterial Therapy Department. 2 P.M., Dr. Owen: Medical Outpatients.

Daily:—10 A.M., Visit of Post-Graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART POST-GRADUATE COURSE, Westmoreland-street, Marylebone, W.

MONDAY, Oct. 31st.—11 A.M., Dr. Goodall: Out-patients. 2 P.M., Dr. Moon: In-patients. 5.30 P.M., Lecture:—Dr. F. W. Price: Angina Pectoris.

TUESDAY.—10 A.M., Dr. Parsons-Smith: Out-patients. 11 A.M., Dr. Price: In-patients. 2 P.M., Sir S. Russell-Wells: Out-patients.

WEDNESDAY.—10 A.M., Dr. Parkinson, and 2 P.M., Dr. Moon: Out-patients.

THURSDAY.—2 P.M., Dr. Price: Out-patients. Dr. Moon: In-patients. 6.30 P.M., Dr. Hamill: Out-patients.

FRIDAY.—10 A.M., Dr. Parsons-Smith: Out-patients. 2 P.M., Dr. Parkinson: Out-patients. 3 P.M., Dr. Parkinson: In-patients. 4 P.M., Dr. Goodall: In-patients.

SATURDAY.—10.30 A.M., Dr. Hamill: In-patients.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Nov. 3rd.—4 P.M., Lecture:—Mr. P. G. Doyne: Squint.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

THURSDAY, Nov. 3rd.—6 P.M., Chesterfield Lecture:—Dr. W. Griffith: The Pathology of Skin Diseases.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.

Post-Graduate Course on Infant and Child Welfare.

A Course of Twelve Lectures on the Management and Feeding of Infants and Young Children, by Dr. E. Pritchard, to Qualified Practitioners.

WEDNESDAY, Nov. 2nd.—6 P.M., Lecture IX.:—The Tuberculous Mother and Her Child.

FRIDAY.—6 P.M., Lecture X.:—The Syphilitic Mother and Her Child.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

TUESDAY, Nov. 1st.—4.30 P.M., Mr. W. H. Hey: Recent Advances in Surgery.

ST. MARY'S HOSPITALS POST-GRADUATE LECTURES, Whitworth-street, West Branch, Manchester.

FRIDAY, Nov. 4th.—4.30 P.M., Dr. Clifford: Conditions Simulating Prolapse.

UNIVERSITY OF SHEFFIELD.—FACULTY OF MEDICINE. Post-Graduate Lectures and Demonstrations.

TUESDAY, Nov. 1st. (At the Royal Infirmary.)—3.30 P.M., Dr. A. R. Hallam: Diagnosis and Treatment of Skin Diseases in Infants. 4.15 P.M., Mr. T. Mouat: Nerve Injuries.

FRIDAY. (At the Royal Hospital.)—3.30 P.M., Dr. A. E. Naish: Demonstration of Children's Diseases. 4.15 P.M., Mr. F. Wilson: Surgical Aspects of the Hip-Joint in Children.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.

A Course of Eight Lectures and Discussions on Problems of Public Health in Relation to Industrial Hygiene at the Lecture Theatre of the Institute.

WEDNESDAY, Nov. 2nd.—4 P.M., Lecture III.:—Dr. H. M. Vernon: The Influence of Atmospheric Conditions on Industrial Efficiency.

THE annual dinner of the medical staff of the Central London Throat and Ear Hospital will take place at the Trocadero Restaurant on Thursday, Nov. 3rd, Dr. Andrew Wylie presiding.

CONVALESCENT CARE FOR ARMY NURSES.—A Red Cross holiday hostel for nurses and V.A.D. members is to be opened at St. Helena's, Folkestone, on Nov. 1st. The hostel will be staffed by V.A.D. members recently returned from France, and the warden is an ex-Army matron. Guests will remain for a month, or longer if necessary, the prices charged being reasonable. There is a compassionate fund at the Red Cross headquarters, from which grants can be made to cover visits to convalescent homes and for supplementary treatment.

Notes, Short Comments, and Answers to Correspondents.

INCITAMIN:

A NEW REMEDY FOR THE TREATMENT OF SLOWLY HEALING SORES.

BY PROF. J. F. FISCHER,

DIRECTOR-GENERAL AT THE MUNICIPAL RONTGEN CLINICS OF COPENHAGEN.

ON the introduction of the antiseptic method, when the primary healing of ulcers became the rule, the administration of ulcer remedies had to be considerably limited, and they were likewise to a great extent modified and simplified. There are, however, many ulcers which, owing to their situation and nature, cannot be treated antiseptically, and, notwithstanding the very considerable progress made in local treatment, we still have to contend with ulcers which only heal with difficulty and to which one treatment after another is applied in vain.

During many years' work as an X ray therapeutist, I have been sometimes confronted with the task of having to treat deep, gangrenous, very painful, necrosed ulcers with a minimal healing tendency, the chronic course of which is the despair of both patient and physician. When treating such ulcerations, where nutrition of tissue is exceedingly slight and the regenerative power almost lost, every generally applied remedy is tried in turn; if the necrosis is deep-rooted, the treatment will, as a rule, prove useless, but continuous treatment lasting years may now and then lead to a satisfactory result, or the object may possibly be attained through an operation.

A patient who had on the back of his hand an ulcerous cancer slightly larger than a penny (the only possible form of operation being an amputation) was first treated with radium, and thereafter with X rays. Though the growth proved only very slightly radio-sensitive, and the radiotherapeutic result could not consequently be very encouraging, treatment was nevertheless continued for a rather long period, at the earnest request of the patient. The consequence of the prolonged treatment finally became apparent, the irradiated part being transformed into a deep, fœtid ulceration, with necrosis of the sinews and denudation of the osseous tissue at the bottom. This deep ulceration was found to be considerably larger than the original tumour, and the question of amputation was no less remote than before. During my attempts to heal this ulcer—which presented a problem apparently insoluble—I had ample opportunity of studying the effect of the various methods, and in this case I first used a preparation made up on the basis of previous experiences. To this preparation, gradually altered in composition, I later gave the name of "incitamin," as I consider its main effect to be founded chiefly on an incitation of the sound tissue.

Results Gained by Use of Incitamin.

The application of this remedy produced a most surprising result; the necrosed tissue sloughed away, the fœtid odour disappeared, and in the course of some months the ulcer healed, except in two bean-sized places at the bottom of which were found partly relaxed sequestra. In this state the ulcer remained unaltered for a long time. The sequestra, displaying no tendency to slough, were removed by an operation, and the microscopic examination proved that they contained cancerous tissue.

Highly encouraged by this case—where, contrary to my expectations, a healing of the sore had occurred, except in the places where the malignant tissue had not yet been destroyed—I have during the last eight or nine months made use of the preparation on other ulcers of a more or less chronic nature. Altogether I have had the opportunity of completing the treatment of about fifty patients. Space will only permit me to record some few of these cases, and only the essentials of each case have here been noted. The preparation is referred to in the reports as "Fischer's fluid."

CASE 1.—M. G., female, aged 42, unmarried; X ray, late ulceration. Treated from March to June, 1919, for fibromyoma uteri. Received during the three months on each skin area 15 Holzknecht units, beneath 4 mm. aluminium filter. Three seances. Distance 28 cm. In November of the same year the skin on the right side of the abdomen became much infiltrated and red; here a very painful and progressively deepening ulceration was formed. There was no irritation in any part of the irradiated skin. Was treated with ordinary remedies without success, the pain continuing the same. In March, 1920, the ulcer had the extent of a hen's egg, with infiltrated, undermined edges, and

the bottom covered with a dirty-coloured, fœtid, firmly fixed, tattered necrotic coating. Pain still very severe. On the 16th, dressing with Fischer's fluid. On the 24th, ulcer much cleaner, pain almost ceased. On the 31st pain ceased, ulcer filling up with granulations. On April 23rd ulcer now filled up, granulations fresh. On May 21st ulcer reduced to half. On August 25th, ulcer healed, skin smooth and only slightly atrophic.

CASE 2.—"Kommunehospitalet," (Municipal Hospital), Copenhagen. Chr. H., male, aged 47; burns. On May 6th, on the fore side of the right thigh, near the groin, were found two ulcerations of about the size of a sixpenny-piece, with irregular, necrotic edges and sunk central part, covered with a yellowish-green necrotic tissue. Fischer's fluid prescribed. On the 8th the central parts of the burns almost on a level with the surrounding sound integument; necrosed tissue of the edges is partly cast off. On the 11th sores diminished; edges fresh with pinkish epidermis. On the 24th sores healed.

CASE 3.—Kommunehospitalet. T. E., male, aged 15; adenitis inguinalis, ulceration. Transferred from Ward 4, where he had been since Oct. 28th, 1919, under the diagnosis of ulcus penis, balanoposthitis acuta, right inguinal bubo. An incision had been made above and below the ligamentum, and a good deal of pus had been evacuated. The ulcer was treated with resorcin, lapis infernalis, iodoform, salicylic acid, sulphate of copper, and sublimate; the cavity persisting, he was removed to Ward 5 on April 7th, 1920. Physical examination showed nothing abnormal except ulcer in groin, of irregular shape with edges rolled up, being a good centimetre in depth. Skin cicatricial and red; ulcer only slightly tender. On April 8th, in probing the cavity two recesses were felt extending upwards and inwards, one for 2–3 cm., and the other for 2 cm. A V-shaped section was removed for microscopic examination. Plugging with iodoform gauze. On the 14th, only a little secretion; edges slightly infiltrated. On the 27th, still some secretion; superficial ulcer healing slowly. On the 30th, ulcers practically unaltered. Dressing with iodoform gauze. On May 8th, no retention; ulcers spreading on the surface. Dressing with Fischer's fluid. On the 10th a furuncle had appeared just above the symphysis. On the 12th *B. pyocyaneus* had appeared. On the 14th, the ulcers in the right groin had for the last six days been dressed with Fischer's fluid. At the beginning of that time there was a plum-sized cavity, and above it a filthy ulcer (8 by 15 cm.), flat, covered with rather flabby granulations; on this date cavity was filled up from its base, and only the size of an almond; granulations in both ulcers fresh and clean; new growth of epidermis progressing in a broad border from the edges. On the 17th healing constantly advancing; formation of new epidermis on superficial ulcer twice as broad as on the 14th; deep ulcer filling up well with granulations, and now size of kernel of a nut. On the 21st granulations growing rapidly, everywhere vigorous and clean; growth of epidermis advancing in a surprising manner; fresh epidermis seems especially vigorous and powerful; recess has further diminished. On the 25th large cavity completely filled up and almost healed. Superficial ulcer progresses with formation of epidermis like a fine veil over the granulations. Growth of epidermis seems slower than at first. On the 27th ulcers nearly healed. On June 11th ulcer healed, except a few spots the size of a pea. On the 14th ulcer healed; patient discharged.

CASE 4.—Kommunehospitalet, Copenhagen, Ward 5. M. B., male, aged 19, unmarried; burns on forearm. Admitted March 23rd, 1920. Five days previously had sustained burns, having fallen into a pail of charcoal whilst feeling ill (pleuritis). Burns on both legs and right forearm; below the elbow on the extensor side a burn of third degree, about 4 by 10 cm. On April 21st, record states that very considerable granulated skin defects had gradually formed below and around elbow. At bottom of defect nearest the ulna, bone denuded to extent of finger's breadth. On the 24th, under regional anæsthesia with novocaine-adrenalin, transplantation from the right thigh. Firm closing salt-water dressing; dressing changed. On May 1st, only a few islets of skin fixed on large ulcer; heavy secretion. On the 3rd, dressing changed. On the 5th, a few scattered patches left from the transplantation; cavity above upper part of ulna filling up. On the 8th, during local anæsthesia with novocaine-adrenalin another transplantation (Thiersch's method) performed on the remaining surfaces. Salt-water dressings. On the 14th the salt-water dressing had been shifted a few times; some patches adhered. On the 20th dressing with Fischer's fluid. On the 22nd, sores of considerably smaller extent; granulating surfaces fresh and slightly bleeding. On the 27th ulcer diminished wonderfully well and rapidly; new growth of epidermis appears particularly strong. On June 8th epidermis growing over nearly whole surface of sore; only three very small spots not yet healed. New growth of epidermis remarkably good and strong; all movements of elbow entirely free. Patient discharged. On the 11th, after ambulant treatment, sores completely healed.

CASE 5.—Private. H. K., male, married, aged 51. X ray, ulcerous. Seen on May 21st, 1920; during some years had suffered from "eczema" on right calf; treated successfully with X rays two years ago; owing to relapse the treatment was repeated last year. Received altogether five irradiations—dose unknown. Shortly after last irradiation diffuse reddening of irradiated area occurred early in December; later a deep painful ulcer developed, not perceptibly influenced by treatment during past six months. Pains so excruciating and persistent that he can only get a little rest by sprinkling sore with anæsthetics several times daily. On right calf a sharp-edged ulcer, about 6 by 6·5 cm. on surface and about 2 cm. deep, covered with soiled, yellowish-green foulness, through which spots of reddish tissue faintly seen. In circumference of ulcer five or six large blebs. Fischer's fluid used. On the 22nd pain considerably abated; anæsthetics not used. On the 23rd blebs spreading; patient admitted to Kommunehospitalet; discharged after a week for further treatment with Fischer's fluid. On July 3rd sore clean, and of smaller extent; patient free from pain, able to attend to his duties. On Oct. 15th sore the size of a shilling. On Nov. 10th, sore smaller, 2 by 2 cm.; bottom clean.

CASE 6.—X ray clinic of Kommunehospitalet. J. O., female, aged 62; ulcus cruris. On June 5th patient had been treated in the Policlinic for about ten weeks with boiled water, chloric lime-water, lapis, with no success; experimental treatment was therefore suggested. In the fore part of the right lower leg an irregular, filthy, undermined ulcer of the size of a penny, with excruciating pain. Treatment with Fischer's fluid. On the 10th sore cleaner, pain nearly ceased. On the 14th ulcer superficial, pain ceased. On August 6th ulcer healed. During treatment she has done her work as a charwoman. On Oct. 2nd patient seen; ulcer is still healed.

Remarks.

All these cases refer to patients with ulcerations that had either appeared quite refractory to previous treatments, or had only shown a slight tendency to heal. In every case the treatment with incitamin gave a particularly favourable result, and it cannot be disputed that the time of treatment was considerably shortened for these patients. Among these patients, and others whom I have treated, several were spared sojourn in hospital—a fact worthy of emphasis.

Case 3 showed a serpiginous ulceration in the right groin. At first a bubo was found which was incised above and below the ligamentum. In spite of six months' treatment with such different remedies as resorcin, lapis, iodoform, sulphate of copper, and sublimate, the cavity remained; the patient was transferred into the surgical department, where two abscesses were opened; but on the surface the ulceration spread. Fischer's fluid was prescribed. At that moment there was a cavity the size of a plum, and above it an unclean ulcer, covered with rather flabby granulations. Six days later the cavity was filled up from its bottom, and was only of almond size, while the new growth of epidermis was rapidly advancing. A week later granulation was proceeding with great rapidity, and the tissue was everywhere strong and vigorous. On the eleventh day the great cavity was entirely filled up, and after the lapse of five weeks the ulcer was healed. Ten days later the cure proved to be lasting.

Case 4 exemplifies very well that the new growth of epidermis in an ulcer can take place in a surprisingly quick manner when the latter is treated with incitamin. The patient had a large burn on his forearm, which remained practically unaltered for about a month. Graftings had been tried with no great result. Two days after incitamin dressings were begun the ulcers had diminished considerably, and a daily advance of the new growth of epidermis was noted. On the eighteenth day there only remained three very small spots, covered with epithelium. The patient was then discharged and treated ambulatorily; on the twenty-second day the ulcers were entirely healed with good and strong epidermis. Finally, it must be pointed out that epidermis formed during treatment with incitamin has always been particularly good and strong.

When ulcers were unclean, covered with necrotic tissue, and fœtid, they cleansed wonderfully rapidly; a fresh vivid red, often slightly bleeding granular tissue developed, at times with granulations so luxurious that cauterisation with lapis was expedient. Of late I have often applied this method. No caustic was applied, however, to the above-mentioned patients, for it was important to make the tests as far as possible exclusively with incitamin. Wherever ulcers were attended with pain, the latter ceased after a short time; this fact is greatly in favour of the preparation. In one case of ulcus cruris one remedy after the other had in turn to be given up owing to the pain it caused; treatment with incitamin was carried out with no difficulty, and the ulcer healed. Even in the case of X ray and radium ulcerations—where pain is most intense and persistent and, as a rule, can only be relieved through the employment of strong narcotics—the preparation did not fail. In Case 5, an X ray ulcer, the patient was under the necessity of sprinkling the ulcer with anæsthetics to sustain the pain. As soon as dressing with incitamin was employed the pain diminished considerably, and ceased entirely a few weeks later. The same thing happened with other patients with similar ulcerations.

Properties and Indications.

Incitamin is no panacea; like every other remedy it has its limitations, but the lines of these cannot be indicated with any degree of certainty on the basis of the comparatively slight material—about 50 cases—at present at my disposal. The estimation of the importance of a vulnerary remedy is no easy matter; the number of these remedies is legion, and if particular interest attaches to a new remedy, it must necessarily accomplish more than those previously employed. The recorded instances make indisputable the various qualities of incitamin; not least important of them is its soothing power, which induces the patients gladly to acquiesce in its employment. In cancerous sores its effect

has naturally been temporary, although as an anodyne and cleansing agent it has not been without effect. In strongly suppurating ulcers incitamin is not particularly indicated, its domain being pre-eminently the torpid, stagnant ulcerations. In syphilitic and tuberculous sores the remedy does not produce any great effect. But in ulcera cruris incitamin has, on the whole, proved very satisfactory. The recorded cases prove that ulcers of long standing, uninfluenced by all other methods, have been healed with comparative rapidity through treatment with incitamin. With regard to tibial sores, the aim is to have them healed while the patients are yet in motion. If they heal during confinement to bed, the risk of relapse when the patient gets up is very great; ulcers treated with incitamin may be more secure against relapse than those healed in another way, but the healing is not fully reliable. Confinement to bed cannot, as a rule, be avoided at the beginning of treatment, but when the size of the sore has obviously diminished—i.e., when the growth of fresh epidermis is progressing—the patient should get up for increasingly long periods every time, in order to proceed to ambulatory treatment as soon as possible. I have sometimes carried a successful treatment through outside hospital by means of home nursing.

At the beginning of this article I mentioned that my interest in the question of a vulnerary remedy which would effect to a higher degree than those hitherto employed, the generation of tissue, arose through my dealings with ulcers which both as regards pain and healing tendency proved intractable within a reasonable period. The usual inorganic preparations and vegetable infusions (the latter in several cases proving superior to the former) proved, on the whole, to be of so little use that I experimented with other preparations, and ended by treating these ulcers exclusively with animal-organic substances. As appears from the above, my work in this direction has not been without success.

Composition of Incitamin.

My attention has chiefly been directed towards extract of the pancreas, pepsin with its tissue-conserving qualities, saliva—which so far as animals are concerned plays a part in the healing of sores—and towards serum. I shall not enter more closely into my numerous experiments—some satisfactory, others futile—the result of my researches is the organic preparation, usually referred to as Fischer's fluid, to which I have now given the name "incitamin."

This preparation is composed of horse serum treated with trypsin and freed from coagulable substances, horse saliva, and carbolic acid. The composition is about to be altered, and I cannot at present give it more exactly. The preparation is now produced under my personal supervision, and may be obtained from Serpens, Ltd., Christianiagade 16, Copenhagen.

Incitamin is a colourless or slightly yellowish, not quite clear fluid; after standing for some time it deposits a sediment, but is not thereby rendered less useful. The durability of the preparation has been tested by keeping it for a considerable time in a thermo-state, but it is always safer to keep it in a cool and dark place. It is non-poisonous when the method of producing it prescribed by me is followed; this fact is sufficiently demonstrated by the extensive controlled use made of it. In the preparation of incitamin certain precautions must be strictly observed; and for this reason every bottle will therefore be provided with a control number which guarantees that the preparation has been tested by injection into mice and guinea-pigs, and in other ways. Incitamin is administered in the form of poultices in such a way that a thick, well-wrung gauze-compress, a little larger than the sore itself, is placed on the sore and covered with a waterproof substance, preferably gutta-percha paper, the whole being kept in place by a dressing. The dressing is changed every morning and evening, but more frequently if there is much suppuration or any pain. Any cavity in the ulcer must be filled up with gauze, moistened with the preparation. As a rule incitamin does not irritate the skin surrounding the sore; even if—as often occurs with ulcus cruris—the skin is atrophic, there may be a beneficial effect. Any irritation of the skin may be treated with an ointment, but the latter must not reach the edges of the sore. Incitamin is counter-indicated where idiosyncrasy for carbolic acid is present; but carbolic acid is only present in ½ per cent.—and in none of those treated by myself have I found idiosyncrasy.

For assistance rendered me in preparation of the remedy my thanks are due to Mr. Marcussen, chemist. I must also thank the senior physicians who have permitted trial of the remedy in their wards, especially Dr. P. N. Hansen, chief surgeon, and Dr. H. Bing, senior physician, who has in many ways rendered me valuable assistance.

Rescue Work in S. Africa.—Dr. L. G. Irvine's book on First Aid and Rescue Work in Mining, reviewed in THE LANCET of Oct. 8th, may be obtained in London from the Technical Bookshop, Salisbury House, London, E.C. 2.

COMPARATIVE PLANT PATHOLOGY.

IN his Chadwick Lecture on Plant Diseases and their Relation to Diseases in Man, delivered before a large audience in the lecture room of the old Chelsea Physic Garden on Oct. 20th, Dr. V. H. Blackman, F.R.S., professor of plant physiology and pathology in the Imperial College of Science, attractively set out the resemblances and differences between disease in the animal and the vegetable organism. There was, he said, great variety in the degree of anatomical association between host and parasite. Sometimes the actual parasite merely lived on the surface of the leaves or other parts of the plant, any injury being mainly indirect, either by blocking the pores or by obstructing light. There was a closer association when the surface parasite by means of suckers took nourishment from the host. A more intimate degree was shown by the parasite which actually lived within the plant. The main part of the fungus might live in the intercellular spaces, putting out suckers to absorb the nourishment of the living cells; or the parasite might live wholly inside the cells. Some of these conditions were illustrated on the screen by microscopic sections of *Plasmodiophora brassicæ* (club root), which attacks turnips, kohlrabi, and other cruciferous plants, causing tuber-like swellings.

Physiological Association.

Plant disease, the lecturer went on, was simply abnormal physiology, and the most promising line of investigation involved the question of physiological association. Some associations could hardly be called parasitical—when, for instance, the invading organism lived on the products of death, or when two organisms lived together to their mutual advantage. He would take two cases from the extreme ends of diseases as shown in plants. When a plant was attacked by grey mould (*Botrytis cinerea*) the threads of the fungus penetrated the tissue of the host in all directions and brought about the death of the plant tissues. The cells of the host were reduced to a mere mush, the killing action being due to secretion by the hyphæ of an enzyme which dissolved the cell walls. It was not necessary for the cells to be penetrated as the hyphæ could kill at a considerable distance; the fungus really lived on dead tissue and was therefore hardly a parasite at all. How did it get into the tissues, to do which it was necessary to penetrate the cuticle covering the leaves which acted as a barrier against invading organisms? The fungus had either to force the barrier or turn it. The spore of *Botrytis* threw out a tube surrounded by a gelatinous layer, with the help of which the tube attached itself to the leaf and forced its way through the cuticle. It was not till the tube had got through, that chemical action occurred and the cells were killed; the cuticle prevented any action by the enzymes. The physiological relations of *Botrytis* were thus very simple; it mechanically forced its way into the plant, when the enzyme which it secreted killed the cells and the fungus lived on the dead matter. An example more physiologically complex was afforded by the rust fungi (*Puccinia*), the highest group of true parasites. They had no gelatinous sheath and a totally different method of penetrating the tissue of the host. They did not force the barrier, they turned it. The spores sent out germ tubes along the leaves of the host until they found a stoma which was entered, whereupon the hyphæ came in contact with the cells and abstracted nourishment from them. So far from the cells being killed they were stimulated by the presence of the fungus and proliferation of the tissue followed. This presented one of the great difficulties in studying plant disease, for symbiosis often developed. In the present case the fungus was the dominant partner. After a time certain changes took place in the cells; they became disorganised and died, and the symbiosis passed into a condition of true parasitism. Knowledge was needed of the process which led to harmony at the beginning and later on to disharmony.

Defence Against Disease.

What defence had the plant against such diseases as these? The *Botrytis* forced the barrier, but if the cuticle was resistant enough a fungus could not get in. In some cases the chemical nature of the cell wall was such that the plant could not be attacked. The cuticle also played another part. The fungus cells could not penetrate unless supplied with nutriment, and the supply was related to the degree in which the cuticle allowed the diffusion of substances out of the leaf. This was illustrated on the screen by slides showing that germination of spores on glass produced very short hyphæ, on a rose petal they were longer, and on a cactus longest of all, since the cactus supplied the most food.

In discussing the defences of higher plants against disease, the lecturer said that many forms of *Puccinia* attacked cereals and different wheats showed varying degrees of immunity. Almost any rust fungus could enter almost any leaf, but unless the plant was susceptible the fungus did not inoculate the leaf. Tissues which succumbed so

rapidly to the attack of the fungus as to starve it showed what was called hyper-sensitiveness. What happened was not known; no toxins or antitoxins had been shown to exist, symbiosis appearing to be a delicate balance between physiological processes of the host and the parasite. Where the host plant carried the disease there was a condition somewhat similar to the case of carriers in human disease.

One of the striking things about plant as compared with animal diseases was the absence of known cases of acquired immunity, and, as a result, of true cure. In plant disease no substances had been detected corresponding to antitoxins, bacteriolysins, and so forth, nor was there any evidence of chemical warfare between plant and infecting organism. The cells of the host plant once entered nearly always died; the plant, therefore, resisted disease by keeping the invader out. In man one of the common results of disease was a bodily reaction associated with high temperature and evidence of general poisoning. In plants there was no general reaction; plants were attacked locally and each cell or group of cells fought a lonely battle. As the result of local attack, and the absence of a central reservoir, it was naturally difficult to isolate toxic substances. It had been suggested that botanists might get some help from vaccine and serum therapy, but, apart from the lack of evidence as to the production in plants of immune bodies, no satisfactory means existed of introducing sera or vaccines, there being no blood stream to distribute them. A fundamental difficulty often overlooked was the manner of growth. The plant continuously produced new organs; hence, to be effective, acquired immunity would have to be transmitted to what really was a new generation of the plant.

An Ultra-Microscopic Organism.

A class of disease known as "mosaic" had come to the front in the last few years; it was characterised by alternate patches of light and dark green coloration on the leaves. Known for a long time in plants like tobacco, this disease was highly infectious, although no infecting organism had been observed. In this respect it might be compared with yellow fever or measles. There were many theories as to the origin of the disease, but Prof. Blackman himself believed it to be due to an enzyme, the virus being destroyed by alcohol and other antiseptics as well as by heat. As with yellow fever, mosaic disease was largely carried by insects—namely, aphides. One of the best known cases of symbiosis was that known as *Mycorrhiza*, which actually penetrated and lived inside the cells of roots. Although the host plant controlled the development of the fungus, yet without its presence in the soil the plant did not develop satisfactorily. In one group there was a compulsory association between the fungus and the higher plant; in the case of ling (*Calluna vulgaris*) the seed even would not develop properly without the presence of the fungus. The fungus exhibited the phenomenon of attenuation when cultivated by itself; in symbiosis something occurred like phagocytosis, as hyphæ underwent digestion inside the cells. Stimulus to development, however, took place long before digestion began, and the higher plants could keep the fungus away from the growing points. A Japanese orchid had become so dependent on an invading organism that it had ceased to produce roots and depended absolutely upon the fungus for its water and food. A unique case was that of darnel (*Lolium temulentum*), the fungus being present when the embryo developed, passing through the integument into the interior of the embryo, from which it never emerged.

In conclusion, said Prof. Blackman, in spite of a number of definite points in which plant disease showed resemblance to animal disease, the similarities were less than the dissimilarities. Comparative pathology in the case of plant and animal diseases was still in its infancy.

SMITH'S PHYSICIANS' AND SURGEONS' VISITING LIST.

WE have received from Messrs. Hazell, Watson and Viney, Ld., of Long Acre, London, a copy of Smith's Physicians' and Surgeons' Visiting List, which is now in its seventy-sixth year, and is presumably well known to many of our readers. This pocket-book is prefaced by an almanack, and by the usual contents of all almanacks, such as postal regulations, the monthly and weekly value of annual incomes from £1 to £1000, directions for making a will, tables showing the expectation of life, weights and measures, &c. For a more specially medical public suggested scales are given for professional fees, a table of eruptive fevers, and other tables showing average heights and weights of man, and the proper dosage for drugs in proportion to the age of patients. There are also lists of the principal poisons and their antidotes, an elaborate prescribers' compendium, an abstract of the Infectious Disease Notification Act, and a list of benevolent societies having the medical profession as their object.

A large portion of the pocket-book is naturally taken up with a journal ruled for ordinary visits and for obstetric and vaccination engagements, with spaces in which to keep cash accounts. Vacant pages are left for lists of drugs and instruments wanted, and (quite an important matter) for things lent. We have nothing but praise for a handy and comprehensive pocket-book.

X RAY APPARATUS.

WE have received from Messrs. Schall and Son a new edition of their catalogue descriptive of the X ray apparatus which they are prepared to supply to the medical profession, and it is accompanied by a note upon X rays in gynæcology and in the treatment of malignant diseases. This interesting note gives a fair summary of the good results which have been reached at the Universities of Erlangen and Freiburg in the treatment of some diseases of women and some deep-seated malignant diseases by X rays, while the catalogue contains full description of the apparatus for the production of rays of suitable power for deep radiotherapy.

BRIGHTON WATER-SUPPLY.

FOR the first time for 30 years or more the Brighton corporation has been obliged to give only an intermittent supply of water. Street watering disappeared long since, but still the daily consumption in the district showed no diminution, averaging, in fact, 40 gallons per day per head of the population. This the authorities consider represents a considerable waste, and with a shortage of water in the wells the corporation has felt bound to curtail the supply. This is now being done by shutting off the water from the mains daily from 5 P.M. to 5 A.M. The Brighton water-supply is obtained from chalk wells on the South Downs.

THE REAPPEARANCE OF OSCAR GRAY.

To the Editor of THE LANCET.

SIR,—The disappearance of a Rugby schoolboy was described in a letter to THE LANCET of Oct. 15th, which gave reasons for supposing that it might have been due to temporary mental conditions consequent upon a fall, which, in fact, had immediately preceded it. The boy's absence must have caused acute distress to his relatives, as there have been other disappearances, recently chronicled in the press, for which no solution has ever been found, and which may have had a fatal ending through foul play or otherwise.

Oscar Gray has, however, been found, enlisted as a private in the Royal Engineers. An interview with him in the *Daily Express* assigns military ambition and a desire to earn his living at once as his motives, and records him as saying with reference to the search made for him that it was "very amusing." One of his observations was, "I never wrote to my people, I kept on putting it off. I suppose I had not the imagination to realise how they would be worrying about me." If this boy is a typical schoolboy his performance is a curious revelation of boyish psychology. Lack of imagination may have played its part, but it was combined with a lack of consideration for others which, it is to be hoped, is not characteristic of the younger generation. He appears to have found no difficulty in enlisting under an assumed name, and presumably without any inquiry as to his identity or character. This at his age is a circumstance which seems to require explanation.

I am, Sir, yours faithfully,

Oct. 23rd, 1921. A PARENT.

Irish Births and Deaths.—For the second quarter of the present year the birth-rate for Leinster was 23·7, Munster 19·3, Ulster 24·1, and Connaught 18·0—the figures being per 1000 of the population according to the census of 1911. During the same period the death-rate was 15·9, 14·9, 16 1, and 14·5 for the four provinces taken in the same order.

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